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ABSTRACT

In a three-year study, Research for Better Schools (RBS) was asked by the National Institute of Education to identify, analyze, and verify definitive social changes forecast for the decades ahead, and to project their implications for schools of the future. RBS reviewed the literature to extract future planning needs relevant to educational practitioners. These needs were assessed in a survey of 162 innovative educators and served as the basis for four independently created educational designs for the future. The only constraints on these designs were a requirement for implementation by 1985 and a consideration of cost effectiveness. This document discusses the planning needs found in the study and presents the four designs based on them: John A. Connolly's plan focusing on mastery of basic cognitive, life, and career skills; Glen Heathers's design for training students to be adaptable to change in schools redefined as centers for guiding and coordinating instruction; Patricia Henning's design for a comprehensive integration of school and community; and David Helms's Comprehensive, Adaptive, and Responsive Educational System, an instructional management system with an inschool research and development component. (Author/PGD)

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PLANNING SCHOOLS FOR THE FUTURE

by

JoAnn Weinberger

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Developing designs for schools of the future is a most formidable task. Special credit should be given to Glen Heathers who, in addition to designing one of the models presented here, also prepared Chapters I, II, and VIII; Patricia Henning for conducting a comprehensive literature search, compiling the bibliography, and developing one of the models; and John Connolly and David Helms for explicating their models for education centers of the future.

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PREFACE

This book represents the culmination of a three-year project conducted by Research for Better Schools (RBS) for the National Institute of Education. RBS' specific task was to identify, analyze, and verify definitive social changes forecast for the decades ahead and to project their major implications for schools of the future, paying particular attention to individualizing and humanizing instruction.

Initially, RBS reviewed a large body of social science data to extract significant generalizations having particular relevance to education. Then, a group of distinguished individuals -- including Daniel Bell, Elise Boulding, Kenneth Boulding, R. Buckminster Fuller, Harold Lasswell and Jonas Salk -- speculated further about these notions and noted trends of particular importance to schools. In addition, prominent educators -- namely Urie Bronfenbrenner, Robert Glaser, Louis Rubin, Robert Scanlon, Harold Shane and Ralph Tyler -- analyzed the trends to determine priorities in planning for future schools. Congresswoman Shirley Chisholm and Senator Richard Schweiker examined the projections in terms of the federal role in education and political viability. The complete remarks of these speakers is being published by Allyn and Bacon in two volumes: The Future of Education: Perspectives on Tomorrow's Schooling (February, 1975) and a second volume, yet untitled (anticipated April, 1976).

To determine whether these future planning needs were relevant to educational practitioners, a questionnaire was developed to collect their observations and opinions. A total of 162 superintendents, associate and assistant superintendents, curriculum coordinators, principals and teachers from across the country, selected for their active interest in innovation and concern regarding planning schools for the future, responded. This survey substantiated that areas identified through the literature survey and symposia were of the utmost importance in future school planning and development activities. Chapter I presents an overview of these trends; Chapter II discusses their educational ramifications.

Using these priorities as a basis, four designers at Research for Better Schools created independent plans for schools for the future. A time-frame for implementation by 1985 and a cost-effectiveness mind set were the only constraints placed on them. After the completion of prototype models, a group a school practitioners from across the country convened in Philadelphia to critique each of the designs. Chapter III introduces these designs; the designs, themselves, appear in Chapters IV, V, VI and VII; Chapter VIII addresses their implementation.

Unfortunately, efforts aimed at studying the future often are pursued faddishly, without regard for plausibility, legitimacy and predictive uncertainty. Because of this, the designers of the models exercised great care in restricting themselves to social and educational projections that responsible and informed observers regarded as highly probable. Hence, while the instructional environment on which the models are based cannot be viewed as certain, the odds favoring their occurrence are reasonably good.

A straightforward rationale underlies the models. Historically, schools have tended to respond to social change somewhat tardily; the result has been too little and too late. Furthermore, it seems that institutions, if they are forewarned and prepared, can, at least to some extent, influence their own destiny. Thus, if we know something about what the future is likely to bring, even in the most general terms, we can seek solutions which avoid early obsolescence. If, on the other hand, we fail to look ahead, we may initiate actions which are doomed to be obsolescent.

Why, one might ask, should we seek alternative models? Why not design the one school that is most likely to suit our purposes? As the staff at Research for Better Schools pondered these questions, it quickly became apparent that no single school could adequately serve all the interests of a diverse clientele. In fact, the need for educational diversity will be considerably greater in the future than it is in the present. In addition, as the project developed, it became clear that opinions differed among scholars, educators, and experienced designers, both as to the implications of the available social forecasting evidence and even more fundamentally, as to the basic function of schools. The staff also concluded that local adaptation, due to particular school environments, community expectations, parental concerns, and student attitudes, would be an important factor in determining appropriate elements for a specific district or school.

The models, in total, are an experimental beginning. They mirror the particular predispositions, values, and learnings of their creators. Other professionals, working with the same data, would probably stress different rationales and follow different paths. However, they do represent frameworks; that is, they can be revised, refined, added-to, deleted, and generally modified according to local need and preference.

No district, obviously, will find it possible to immediately establish a school based on these models. Many of the technological and attitudinal prerequisites are not yet in existence. Nonetheless, several steps can be taken which in time may prove to be of great benefit: first, the models can be used as a device for alerting the profession to the inevitability of change and the need for thinking ahead about how school systems should prepare tomorrow's students for the world they will encounter; second, the models can be a useful aid to that segment of the profession specifically concerned with research and development since the specifications and underlying premises have considerable bearing on their endeavors; third, the societal projections upon which the models are based can familiarize teachers and curriculum planners with subject-matter that perhaps should be incorporated into current instruction on social systems; fourth, the models should be helpful to professors of education for pre-service or in-service course work; fifth, state education departments may find the models useful in staff training and in their work with school districts; sixth, school and community planning groups may want to use the models to generate changes in their schools; and seventh, particular aspects of each model can be tested without undue difficulty, and in instances applied in preliminary form within the present school structure. The extension of learning opportunities into community life, the organization of classrooms for maximum responsiveness to individual student needs, and the basic reconstruction of curricular priorities, for example, can all be subjected to hard-core experimentation and real-world evaluation.

The focus of the work is on changes that are needed at the local level. The future of education, and of the large society, will not arrive anew on a particular day; it will unfold slowly as various forces and pressures spawn new aims, new responses and new adaptations. The models represent a beginning in this direction.

> "The designs in this book propose educational objectives that are responsible to the demands and opportunities of our changing society, and they outline ways by which a much wider variety of learning experiences can be utilized to attain these objectives. They point out the importance of reforming occupational education, which is certainly a critical problem at this time when the structure of occupations as well as the specific jobs are in a period of continuing change. The designs emphasize community involvement in education and suggest ways of dealing constructively with diversity and managing individualized instruction. They also address some of the problems of implementing change in schools. I have found in these designs a wealth of significant and helpful suggestions for the development of schools in the future."
>
> Ralph Tyler
> Director Emeritus
> Center for Advanced Study
> in the Behavioral Sciences
> Stanford University

CHAPTER I

FUTURE TRENDS CHALLENGING THE SCHOOLS

The ultimate goal of education is to prepare students to live in an unknown future. Consequently, the challenge to educators is to equip students with the knowledge, skills, and values that will enable them to live effectively, productively, and enjoyably in tomorrow's world. For the student now in school, the future lies in a time band extending from the present through the decades ahead to the year 2000 and beyond. How can educators ensure that instruction offers valid preparation for such a future? To accomplish this, the first task of educational planners is to review social, economic, political, and other forecasts and then to make the best possible estimates of the opportunities and problems they will present to determine what sorts of changes are most needed in education.

The literature of futurology is immense and it is not the purpose here to offer a comprehensive review. Rather, what is presented is a summary listing of major societal trends into the future for which there is substantial evidence and which concerns many, if not most, futurologists. It is important to remember, however, that most projections for the future are extrapolations of current trends, and since societal forces are many and interact in complex ways, one must anticipate that there will be some unforeseen outcomes.

The following discussion gives special attention to conceptions of the future presented by speakers at Research for Better Schools' two national symposia on planning schools for the future: Daniel Bell, Elise Boulding, Kenneth Boulding, Urie Bronfenbrenner, Representative Shirley Chisholm, Buckminster Fuller, Jonas Salk, Senator Richard Schweiker, and Harold Shane. Also, it draws heavily from Willis Harman's "The Nature of Our Changing Society: Implications for Schools" (1). It should be stressed that all of the conceptions considered here are from the perspective of Western society, particularly that of the United States.

There is no satisfactory way of classifying conceptions of the future since the various projections overlap so greatly. The classification chosen here simply lists topics under three general headings: perspectives on forecasting the future, major areas of change, and the impact of changes on the individual.

Three Perspectives on Forecasting the Future

Forecasting rather than predicting. Predictions are statements of what is expected to happen while forecasts identify visible trends and alternative outcomes that may happen. Daniel Bell (2) favors forecasting over prediction. He writes:

> My colleagues and I at the Commission of the Year 2000 make a very simple and important distinction between prediction and forecasting. I suppose there are people who, being wise and having lots of experience, can predict. But inherently, prediction is extremely difficult. It cannot be formalized and made subject to rules ... Nor can we make 'point predictions,' which is the prediction of events. There are too many contingencies, so we don't predict ... We forecast. These are trends and probabilities. But even forecasting is difficult because probabilistic statements involve alternative roads, and the farther out in time one goes, the more the 'fan' spreads out.

Bell continues by organizing his forecasting around "structural trends in society" within "three social frameworks": our national society, our emerging communal society, and the post-industrial society. He defines the emerging national society "in the sense of being drawn so tightly together that a shock in one part of the society has immediate repercussions in every other part of the society." He sees two dimensions to the communal society, "an accelerated shift away from the market to public decision making" and a trend in which "more and more claims are made on the basis of group rights--being a black, being poor, being elderly." Finally, to Bell, the post-industrial society now developing represents "a change from a goods-producing economy to a service economy" and a situation in which "we have become dependent on theoretical knowledge and the codification of theoretical knowledge."

Alternative futures. Uncertainties about how current social forces will interact, or what new forces will come into play, require that forecasts take account of plausible alternative futures. Kenneth Boulding (3) states one approach to uncertainty this way:

> Under conditions of uncertainty, it is rational to be liquid, flexible, and adaptable, to postpone decisions, to muddle through and leave options open for the future, to be uncommitted, and to do a whole host of things we would never do under ideal conditions of certainty. The worst of all possible situations is where we have decision making under conditions of objective uncertainty, but under delusions of certainty. Under these circumstances we zero in on disaster, because we become overcommitted, inflexible, and unadaptable, and hence are overtaken and destroyed by the inevitable surprise. The great lesson of evolutionary theory is precisely that it is the meek--that is, the adaptable--who inherit the earth, not the strong--that is, the well adapted and the proud, or unadaptable.

Harold Shane (4) organizes his conception of alternative futures around two distinct possibilities for societal change, utopian and dystopian. Proponents of the former trend, he notes "... agree with John Platt ... who commented back in the '60s that the world had become too dangerous for anything short of Utopia." Under the utopian scenario, Shane organizes possible outcomes by sociofutures, technofutures, biofutures, and human futures. Some projections falling under the utopian label are a decline in racism, a rapid achievement of zero population growth, "increasing success in the benign manipulation and restoration of the environment," perfection of birth control techniques, and improvement in the quality of life factors (though privacy will be hard to preserve). On the other hand, the dystopian scenario projects a grim picture in which today's problems worsen: a rapid population increase, mounting food crises and famine, a gap between rich and poor that may increase to as much as a per capita ratio of 50 to 1, uninhabitable cities, and so on.

Willis Harman (5), in his projections for changing society, focuses on two possible alternative futures, "the second-phase industrial society," and "the person-centered society." Harman characterizes the key features of second-phase industrial society by projecting that:

> in the second-phase industrial society, cybernation will have taken over, and will do better, many of the tasks for which men's minds are presently trained. Those who are leading exciting lives at the managerial or technological forefront of the advancing society will probably work as long hours as at present. For the rest there will be increased leisure to be used for recreation or education ... Change-- the research, development, and innovation process-- will be institutionalized ... These developments will result in the growth of, and concentration of power in, a bureaucratic and knowledge-based meritocratic elite ... New applied technology will have affected life in many ways .. There will be variety in cities too, with specialized forms--scientific city, university city, festival and ceremonial cities, recreation city, experimental cities-- and planned communities ... Along with these advantages there will be some problems. Because of the lag in modernization of undeveloped countries, the gap between rich nations and poor nations will grow even larger ... There will be internal tension too. Although some progress will have been made on the poverty problem, the white-nonwhite conflict will continue, and the alienated young of the sixties will be raising another generation, also alienated. However, the law enforcement agencies will have regained the initiative, violence and counter-violence will be under control, and conflict will mainly take the form of widespread subterranean resentments.

In contrast is Harman's description of the person-centered society:

> The goals of the society include making economic growth meet human needs, achieving knowledge and aesthetic advance, and controlling social problems so that individuals may progress toward their own goals of self-fulfillment. The industrial system is subservient to, and responsible to, these larger purposes of the society. The overarching goal is the cultivation and enrichment of all human beings, in all their diversity, complexity, and profundity ... In the forecasts which describe this society, each individual will be provided enough resources, and in such a way, as to enable him to live in dignity ... The society will be a planned society, but planned in such a way as to deepen, not diminish, the freedom of the individual ... The technological level will be high, as in the second-phase industrial forecast, but the priorities for technological development will be influenced by human and global needs.

Harman's discussion proceeds with an analysis of the revolutionary and the counterrevolutionary forces in society, that will influence the outcomes of his alternatives.

Adapting to change and influencing change. Individuals and groups can respond to change in two different ways: they can adapt to it or they can influence the course of a change. Tolerating increased pollution, for instance, is adapting to it, perhaps by giving up swimming at public beaches. The alternative response might be for a community or region to organize in fighting pollution, as exemplified by programs to clean up the Hudson River, Lake Erie, and Lake Washington in Seattle, and by the state-wide anti-pollution program in Oregon. Adapting to change, by finding ways of using increased leisure productively, for example, often is necessary and constructive. However, it should be held in mind that society and its problems is a human product and that humans therefore are capable of creating a society in which problems are resolved. Even in highly-regimented totalitarian states, when circumstances become intolerable to enough people, protest movements arise and changes are forced that at least improve the human situation. Harman's analysis of revolutionary forces in today's society is very much a point in this regard.

Jonas Salk's (6) analysis of societal evolution from Epoch A (an open system) to Epoch B (a closed system) is particularly relevant to a discussion about influencing change. He holds that during the previous Epoch A, a win-lose strategy was workable in which the strong benefited at the expense of the weak. Today, in Epoch B, he contends that this strategy is no longer viable for survival. Instead, a double-win strategy must evolve in which both parties (individuals, groups, or peoples) benefit from the transaction. His message is clear: human survival depends on a world-wide pattern of mutuality and cooperation.

Salk is supported by Buckminster Fuller's statement (7) that the most distinctive human capability is that humans can use their wisdom to see relationships and to influence events. Applying this to Salk's conception of evolving society shows that humanity needs a double-win strategy in which the essential relationships between A's benefits and B's benefits are taken fully into account. If the double-win strategy is not implemented, Fuller's warning is pertinent: "We are going into our final examination as to whether we really qualify to stay in the universe." (8)

René Dubos (8) also presents an optimistic view of our capacity to prevent problems from overwhelming us in his article, "Trend Is Not Destiny." He writes:

> The future is never an extrapolation of the past ... The escape from existing trends is now facilitated by the fact that societies anticipate future dangers and take preventive steps against expected upheavals ... In the past, disasters caught humankind by surprise; now, future situations are discussed long before the event, especially if they are likely to be dangerous.

Major Areas of Societal Change. Futurologists have many listings of the kinds of changes they project for Western society in the future. The lists, though different in length and specificity, have much in common. The list below is given by Herman Kahn and Anthony Wiener (9) of the Hudson Institute under the heading, "There is a Basic, Long-Term Multifold Trend Toward:"

1. Increasingly sensate (empirical, this-worldly, secular, humanistic, pragmatic, utilitarian, contractual, epicurean, or hedonistic) cultures
2. Bourgeois, bureaucratic, "meritocratic," democratic (and nationalistic?) elites
3. Accumulation of scientific and technological knowledge

4. Institutionalization of change, especially research, development, innovation, and diffusion
5. World-wide industrialization and modernization
6. Increased affluence and (recently) leisure
7. Population growth
8. Decreasing importance of primary occupations
9. Urbanization and (soon) the growth of megalopolises
10. Literacy and education
11. Increased capability for mass destruction
12. Increasing tempo of change
13. Increasing universality of these trends.

Doubtless the fact that the list has 13 items is accidental rather than intentional. Each trend needs to be understood, shaped, and governed in the interest of human survival and welfare.

A second list of "apparent long-term trends" is offered by Willis Harman. (10) This list also contains 13 items, the last two of which are "macroproblems" that have resulted from misusing technological advances:

1. World-wide industrialization and modernization
2. Institutionalization of change
3. Emergence of a "knowledge society"
4. Accumulation of scientific and technological knowledge
5. Increasing lag of technological solutions behind technology-created problems
6. Increasing problems of ecological balance, environmental deterioration, population concentration, and food supply
7. Increasing affluence, with increasing self-consciousness of the under class
8. Growth of a knowledge elite
9. Increasing interdependence of social and political institutions
10. Increasing proportion of growth-motivated persons

11. Increasing stress-producing forces on the individual
12. The macroproblem of our Faustian powers (i.e., the "rampant development and application of technology" leads to over-population, pollution, unemployment, traffic congestion around urban centers, the threat of nuclear holocaust, etc.)
13. The macroproblem concerned with the poverty of the high-breeding-rate masses of the underdeveloped nations. (The problem centers around the tendency for the gap between industrialized and underdeveloped nations to worsen in spite of deliberate programs aimed at closing it.)

Harman's list gives notably more attention to major problems in changing society than does Kahn and Wiener's list.

The discussion of changing society that follows is organized under five main headings, each covering a number of items on lists such as those given by Harman, and by Kahn and Wiener. The intent is to highlight problems that probably will, with increasing urgency, confront people in the coming years, and to highlight some emerging resources for solving those problems.

1. The knowledge/technology explosion. The very rapid developmental pace of new science-based technologies has been Western society's most prominent feature during this century. Futurologists agree that this technological pace will continue at an accelerated rate into the next century. The most pervasive changes will almost certainly be in cybernetics-- control of the production and distribution of goods, and of information, by computer-based technologies. But a multitude of other developments in technology are also forecast with considerable confidence. In 1962, Kahn and Wiener (11) presented a list of "one hundred technical innovations likely in the next thirty-three years." Their list included items on the following topics:

Improved weather forecasting

New power sources

The reduction of hereditary and congenital defects
Human hibernation for medical purposes
Three-dimensional photography, movies, and television (holography)
Reliable, cheap birth control
Inhabited undersea installations
The extensive use of robots as "slaves"
Video telephones
Very low cost buildings
Inexpensive road-free transportation

Daniel Bell (12), in discussing our "post-industrial society," notes two great changes produced by the knowledge-technology explosion. One is our shift from a goods-producing economy to a service economy. He projects that, by 1980, seven out of ten people in the United States will be employed in services rather than in farming or manufacturing. The other change is that "the largest growing class in the society is the professional-technical class." This class depends on theoretical knowledge; it has elsewhere been called the "knowledge elite," or the "meritocracy." To be influential in this kind of society, one must possess theoretical knowledge that provides the basis for sophisticated problem solving in both the areas of physical and human technology.

Harman (13), in discussing our "Faustian powers," calls attention to the multitude of critical problems that misusing technology has engendered-- resource shortage, pollution, the threat of a nuclear holocaust, etc. Elise Boulding (14) emphasizes our need to control the technologists who "operate inside mega-bureaucracies and produce solutions to the problems of human welfare that frequently worsen the human condition." She sees technology as insulating us from nature, from heat and cold, from love and hate, etc. She urges that we must ensure that our policy makers pay attention to "the inner spaces of the human spirit.

that arena we are now urged to explore because outer space puts so many limitations on us."

Not all futurologists are gloomy about making future technology serve rather than destroy us. While writers such as Robert Heilbroner (15) see catastrophe ahead, others find cause for optimism. They believe that technology can be brought under control and into the service of humanity. Given knowledge and power, they say, citizens can shape the course of events.

One optimistic forecast is that by F.M. Esfandiary (16) who sees us as about to enter an age of "limitless abundance--abundant energy, food, raw materials." Excerpts from his article follow.

> Solar power, nuclear fusion, geothermal energy, recycled energy, wind energy, hydrogen fuel--these sources will soon provide cheap, non-polluting limitless energy, enough to last for millions of years.
>
> Agriculture is undergoing an epochal revolution. We are evolving from feudal and industrial agriculture to cybernated food production. Computers, remote control cultivators, television monitors, sensors, data banks, can now run thousands of acres of cultivated land. A couple of telefarm operators can feed a million people.
>
> We now have the capability to extract limitless raw materials from recycled wastes, rocks, the earth's interiors, the ocean floors, space.

An important reason for anticipating greater and more effective citizen participation in controlling how technology is used is the fact that as Buckminster Fuller (17) puts it, "everyone now is in on information and decision-making... Now every child being born is being born in the presence of less misinformation and an enormous amount of increasingly reliable information. I find each of these children spontaneously saying, 'If we can go to the moon, we can organize things on our planet to make it work.'." Harold Lasswell (18), speaks to the same point, calling attention to increased global communication. He says, "In the next few years, unless political constraints intervene, the globe will be laced with centers, subcenters, and outlets that render the entire knowledge inheritance of mankind available to voters and officials any time, any place." He supports this projection this way: "Communication technology is almost at the stage where it can be used if desired to popularize any findings, no matter how complex, at the focus of attention of all elite, mid-elite, and rank and file members of any organization." He proposes, as a key communication modality, a planetarium approach. "A 'social planetarium' can apply a similar conceptual approach to the past and future of the United States or of any component part in the world environment."

2. Global interdependence. The increasing interdependence of peoples on Spaceship Earth for resources such as food, fuel, minerals, and space itself is evident. Harold Lasswell (19) voices little doubt about this trend. "Global interdependence implies that the future of the U.S.A. will be profoundly conditioned by the world environment, and that the future of our neighbors on this planet will be deeply affected by our development." He offers alternative scenarios for such interdependence. The positive scenario calls for the major powers uniting to form a "world order in which coercive violence is at a minimum and institutions of popular government gain strength. In every sector of society, the direction of change will be toward balanced development and wide sharing of valued outcomes." The alternative scenario, instead of offering Salk's double-win strategy of mutual cooperation among the world's peoples, continues and intensifies today's world of nationalistic rivalries and conflicts. "Consider a projection affirming that the divided, militant, and conflictful structure of world politics will continue to retard tendencies in the United States toward cooperation in a fully effective world public order. Tendencies elsewhere will be similarly retarded by the reluctance of the United States to commit itself fully to an inclusive world order." In

this second scenario, the arms race will continue, threats of a nuclear war will intensify, and "there will be a great increase in individual and small group acts of terror." Almost daily, we read of such acts of terrorism by Palestinian guerrillas, Japanese terrorists, and many other individuals and groups who use techniques of kidnapping, hijacking, and assassination to their own ends. But, there are also counter tendencies. The United States is developing improved relations with Communist countries, including, most recently, a joint space mission with Russia. One can only guess about which of Lasswell's scenarios will describe the world of 1990 or 2000. It seems clear, however, that economic well-being here and abroad, along with physical security or survival, depend on whether world-wide cooperation becomes the order of the day.

3. Critical economic and social problems. In terms of both severity and pervasiveness, poverty heads any listing of crisis problems. Alongside the affluent middle class, the lower classes in our society live at or near the subsistence level. A disproportionate number of the poor are members of minority groups--blacks, Puerto Ricans, Mexican-Americans. By-and-large, these people lack the education required to obtain jobs in our urban, technological society. To survive, many millions depend on welfare payments. Most projections into the future are gloomy with respect to lessening or overcoming poverty. Furthermore, a population increase is expected to make even more difficult the problem of coping with poverty. Technological advances are expected to increase the gap between the haves --the meritocracy-- and the have nots. There are two alternative paths to coping with poverty: changing our political/economic system so that it provides for more equitable opportunities for economic and social well being, or intensifying the present approach of providing minimal welfare payments and employing repressive social controls to contain the militant poor when they rise in protest.

A second major problem, closely linked with poverty, is the crisis of the cities. As of mid-1975, New York City is threatened with bankruptcy because of the high costs of public services and welfare. In some sections of our great cities, virtually 100 per cent of the inhabitants are on welfare. Crime against persons has become so commonplace that individuals fear to walk the streets, ride the subways, or stroll in the parks. Many live in fear behind the locked doors of their homes. It seems a safe forecast that our innercities cannot survive into the next century. Some form of decentralized living for our urban poor will be requisite. Whatever solution is achieved, it will be expensive. Transportation and communication technology clearly has advanced to the point where massive urban centers are no longer necessary. Experimental cities have been created--Columbia, Maryland, for example--that demonstrate the feasibility of establishing decentralized communities outside our metropolitan centers. Perhaps the major problem with any form of decentralization will be that of providing employment to the poor who have been relocated. A massive back-to-the-land movement seems hardly likely since farming will become more and more automated and will need fewer and fewer workers.

Another problem that is likely to become increasingly serious is that of technological unemployment. With cybernation, fewer workers will be required to produce and distribute goods and services. Work will be available for the technical and managerial classes, and there may be an increase in jobs involving direct services to individuals. However, it is also likely that a growing proportion of adults will be unemployed or employed for much shorter work weeks. The problems of providing leisure time opportunities will become more and more urgent. With the expected population increase, our already congested recreational spaces will become even more inadequate. Unless solutions to the problem of "time on our hands" are worked out, we can expect severe social conflict, not just during an inner city "long, hot summer" but, all the time and everywhere.

Discrimination against minorities is a persistent and major problem in our society. Although recent developments in the direction of equalizing opportunities for education, jobs, and office holding have taken place, the linkage of poverty and unemployment with minorities continues to make plausible a situation where mounting population and competition for scarce jobs will still put minorities at the short end of the stick. Aside from granting minorities equal opportunities for assuming roles in the larger society, society's direction will be toward a true pluralism in which the distinctive culture of each minority group is fully recognized. At the same time, we are seeing parallel movements in recognition of rights of youth, women, the aged, homosexuals, and other segments in our society that have been targets of discriminatory practices.

Environmental destruction and pollution are problems that depend directly on the decisions made by those controlling national, state, and local policies. Destruction of landscape is the central issue in the surface mining of coal. In the search for energy, the problem is ugly earth scars versus restoration of the landscape. In the case of off-shore drilling for oil, the problem is pollution. Municipalities, states, and sometimes the federal government, have taken explicit steps to control pollution. Oregon, for example, has passed legislation to prevent cluttering of the landscape with discarded cans and bottles. Recycling metal, glass, paper, and garbage is likely to become the rule. One example of citizen responsibility in defense of the environment is the recent petition presented to the White House and Congress by 2,300 scientists, warning of the dangers of nuclear power. The scientists said that no "technically or economically feasible methods have yet been proven for ultimate disposal of radioactive waste--a grim legacy from the nuclear program to future generations." (20) The petition recommended that until such dangers have been resolved, focus should be on conserving energy and developing "techniques for using coal without polluting the atmosphere and for harnessing the energy of the sun, the wind, the tides and the heat of the earth's crust."

Violence and crime have been increasing steadily in our society and, unless correctives are found, may be expected to continue to increase in the years ahead. In 1975, the national crime rate rose 18 percent, according to one report. Rising crime, in the view of most analysts, is chiefly a product of the hopelessness of millions of young people, black and white, who can find neither work nor promise in their lives. Other industrial countries have dealt with the problem through preservation of high employment, retention of a firm family structure, and inculcation of social responsibility. The question for the United States is whether it will mount programs to deal with the root causes of crime, or whether it will continue to support "law and order" efforts to control crime by repressive measures.

Family breakdown is a rapidly growing problem that has been documented by Urie Bronfenbrenner (21). The increase in single-parent families is one sign. According to Bronfenbrenner, in 1974 one out of every six children under the age of 18 in the United States, over 10 million children, lived with only one parent. The number of children of divorce or separation, or of unwed mothers, is growing steadily. As of 1974, 51 per cent of married women with children from 6 to 17 were engaged in or seeking work. One of three married women with children under six were in the labor force, two-thirds of them working full-time. Bronfenbrenner's conclusion is not that women should stay home to raise their children but rather that family fragmentation requires support systems for retaining the integrity of the family and for providing that other institutions share in child care--peer groups, the neighborhood, the school, and the world of work. Obviously the most critical focus of the problem is in the inner city where, as a product of poverty, family breakdown is most frequent.

4. The "Cultural Revolution". For many analysts of changing society, the most distinctive and important trend is toward a basic shift in values that rejects middle class ideology and its promotion of our present industrial, militaristic, and bureaucratic society. There are many recent and current developments justifying the projection of a cultural revolution like the one characterized by Harman (22) in his conception of a person-centered society. Harman attributes the theoretical basis for the "new" values to humanistic and existential psychologists such as Erich Fromm, Abraham Maslow, Carl Rogers, and Rollo May, and to the youth culture. His summary of these values is presented under the four headings given below.

> Beliefs: Basic premises include the affirmation that fundamental to all else in human experience is awareness... of himself and of his relations to others and to the universe... Man responds to a hierarchy of perceived needs, but ultimately his basic dynamic is toward growth and becoming.
>
> Individual-Rights Values: The highest value is attached to the individual's right to pursue self-fulfillment, personal liberty, equality of opportunity and justice, and essential respect as a human being.
>
> Life-Setting Values: Meaning in life centers around the discovery and actualization of one's highest potentialities, the pursuit of self-fulfillment.
>
> Personal Characteristics: The following personal characteristics are values: openness, authenticity, integrity, sensitivity, aliveness, spontaneity, self-honesty, and balance between or transcendence of opposites (reason/emotion, Apollonian/Dionysian, work/play, self/not-self).

In Harman's valuable analysis, "two main issues implicit in contemporary revolutionary activity are:

1. A demand for emancipation on the part of various subjugated or underprivileged groups; and

2. A demand for societal and moral reform on the part of persons, mainly privileged youth, who are not subjugated or impoverished in any ordinary sense."

With respect to the first issue, Harman sees demands for opportunity and potency coming from "Blacks, Third World people, students, draft-age youth, teachers, labor, women, consumers, homosexuals, sexual deviates, marijuana smokers, psychedelic drug advocates, experimenters with marriage substitutes, opponents of the Vietnam war, welfare recipients and poverty groups, and minorities in general."

With respect to the second issue, privileged youth are demanding that our institutions respond to person-centered values instead of those of the "military-industrial-education complex."

Elise Boulding (23) speaks of a cultural revolution when she calls for a stress on exploring "the inner spaces of the human spirit," and the promotion of "human-to-human love." Also, she calls for an emphasis on labor-intensive activities and the development of an "ethic of frugality" to replace today's wastefulness.

One trend the cultural revolution would favor is a decline in the importance assigned to work, a lessening of conspicuous consumption, and the rejection of the economic basis for social status.

Harman's review of revolutionary forces allows for numerous alternative outcomes: revolutionary groups might move to change our institutions or destroy the present system; they might focus on "changing people's heads" and infuse the system with new values, or they might drop out in protest or contempt. The possiblility also exists that counter-revolutionary forces in defense of the status quo will seek to preserve social order through repressive means, perhaps by moving toward a garrison state.

5. Change in authority structures. Power to control the lives and fortunes of individuals traditionally has been vested in the family, in the school, in agencies having the right to hire and fire, in local, state, and federal governments, and in formal or informal organizations or groups

having the privilege of determining membership and rules for participation. However, many changes in the distribution of power have occurred in recent decades, and more are expected in the years ahead. The central question is whether these changes will contribute toward a person-centered society or toward a more regimented society in which the rights of individuals are generally restricted by the rights granted privileged elites.

Many changes in our social institutions, often supported by laws and court decisions, have favored the rights of individuals. Family authority over children has eroded, partly through the breakdown of the family as a functioning unit, partly through legislation to protect children from abuse and denial of freedom. The power of the schools to discipline or expel students has also been restricted by court decisions. The power of the employer to determine the economic fate of individuals has been limited by labor unions and by legislation opposing discrimination against women and members of minority groups. Legislation and court decisions have improved the economic, political, and social status of numerous constituencies previously discriminated against: women, blacks and other ethnic minorities, homosexuals, and those accused of crimes, for example. Furthermore, numerous interest groups have organized powerful lobbies: the consumer movement is one; Common Cause is another. In the area of private conduct, sexual mores have been relaxed. Also, there is currently a strong national movement toward legalizing the use of marijuana.

In spite of these steps to enhance individual opportunity and freedom, other developments have tended in the opposite direction. An increasing invasion of privacy is one example. Harold Lasswell (24), in his survey of "the intelligence function," forecasts that, "As terrorist acts increase, public authorities in the United States will obtain additional support for measures of political surveillance. These invasions are both official and unofficial; they are both legally permissible and impermissible... We will be acutely aware of tapped telephones, radio-TV installations, ventilation, light fixtures, and the like. Pinhead microphones and microsized photographic equipment will be commonplace." Watergate, along with disclosures on the activities of the CIA and FBI, have made the nation aware of the extent of spying on individuals.

The mass media, through channeling and limiting the flow of information, have great power to influence political, economic, and social decisions. Today, it is evident that the power of the press, radio, and television is being used predominantly to serve the status quo, and to support our industrial and military establishments as well as the political groups in office.

The techniques of behavior modification, in which rewards are systematically manipulated to evoke desired reactions, represent another threat to the individual. Such techniques, in the hands of groups desirous of restricting the freedom of individuals, can move our society in the direction of Aldous Huxley's highly-regimented Brave New World.

A further threat is that advances in technology, giving rise to an increasing concentration of power in the "knowledge elite," will bring about a higher level of bureaucracy than exists at present. The more power becomes concentrated in giant, interlocking organizations, the less decision making resides in the people generally. The tendency of bureaucracies is to serve their constituents, the haves, at the expense of the have-nots.

How these counterforces will interact in the future is a matter for conjecture. The many forces and trends favoring participatory democracy and a pluralistic society give grounds for optimism that the rights of individuals will be better served in the years ahead than they are at present. Yet the forces toward a regimented society that favors the few rather than the many must be reckoned with.

Implications of societal change for the individual. In totalitarian societies, the individual is treated as the property and servant of the state. In democratic societies, the individual is sovereign except in time of war. Individual rights are only tempered with responsibilities... obedience to laws and conformity to social pressures taking account of others. This analysis of the impact of change on the individual assumes a democratic society in which the individual, under the Constitution and Constitution-based laws, is empowered as the ultimate decision maker.

Ecomomic change and the individual. Increasing cybernation is bringing about two major changes in the job market. One is a growing preponderance of service jobs in which people relate to people rather than to machines. The other is the elimination of routine jobs by automation and the creation of new jobs that require more knowledge and problem-solving skills. Senator Schweiker (25) projects that by 1980 we will need 50 per cent more professional and technical workers than we needed in 1968. The need is for skilled technical personnel to join the "sub-professions" that our technology is generating.

Also, on the average, the worker can expect to change jobs six or seven times during a 40-year career. Consequently, the need for adaptability and retraining becomes quite obvious.

The alternative futures discussed earlier have different implications for the individual's economic well-being. If Esfandiary's projection of "limitless abundance" becomes reality, there should be available goods and services to meet all of the individual's material needs. On the other hand, if the projection of increasing scarcity in energy and other resources, coupled with a rapid rise in population becomes true, we will need to learn to do with less. Also, with scarcity, an increase in the gap between the haves and have-nots is likely. However, if a person-centered society evolves, social sharing will reduce the affluent-poor discrepancy. In addition, the "cultural revolution" forecasts would lead toward a greater equalization of economic opportunities and benefits for minorities and women.

All in all, the economic future of the individual certainly will be different; but whether for the better or the worse, we cannot forecast. The individual's capability to adapt to changing jobs and to a changing economic base will be critical. Also, the manner in which citizens unite to use political and other forms of power to influence the economic sector will be vital in shaping the economic future.

Political implications of change. Assuming that the individual retains the rights of citizenship in a democracy, what implications has the future for the exercise of those rights? Progress in communication technology can mean that everyone has ready access to all the information needed for political decision making. However, if power elites control the mass media, the information flow to citizens can be distorted to serve special interest groups. Citizen control of the media through federal regulations and other means will be of great importance.

The individual's effectiveness in using the rights of a citizen depends on capabilities to interpret information about both immediate and forthcoming events according to one's values. In the future, those values must take account of the increasing interdependence of individuals and groups in our society, and of our country's increasing interdependence with other countries throughout the world. Two kinds of responses to inter-group and international rivalries and conflicts doubtlessly will continue to be employed: one is the direct use of force as represented by repressive legislation, police action, economic sanctions, terroristic acts, or military action; the other is compromise or cooperation based on the recognition of mutual interests. Many futurologists see the latter course as critical for the survival of our democratic society, if not for the survival of the human race.

One central feature of the emerging "cultural revolution" is increased citizen participation in coping with the great problems of our society--pollution, unemployment, governmental corruption, the invasion of privacy, etc. Another feature is the growing political route being taken by various disadvantaged segments of our society--blacks, women, the aged, homosexuals, etc. Each citizen in the future will find his or her interests heavily involved in these trends, either through direct participation, through passive acquiescence, or through joining forces with those who oppose such trends. It comes as no surprise that the great majority of interpreters of the future hold that the citizen's interests will be best served by taking an active, positive role in these social transformations.

Implications of change for the individual's social role. Many of the changes taking place in our society have direct relevance to the individual's social role. The growing proportion of jobs in service occupations places an emphasis on skills in interpersonal relations. The breakdown of the primary family as the chief reference unit in intimate personal relations and as the focus of social education calls upon the individual either to have improved capabilities for family living or to develop skills in social relationships outside the family.

Societal trends toward the recognition and acceptance of divergent backgrounds, values, and life styles call upon the individual to develop appropriate values and social behavior patterns. Empathy, tolerance, and cooperative ways of relating to others are critical requirements for living in a society that accepts diversity.

Elise Boulding makes a strong case for breaking away from the pervasive age grading in our society. The implication is that the individual needs to learn to relate to others at all age levels. The generations have much to share with one another. This is readily seen in societies where the extended, multi-generation family is the rule.

The problems of social living in our society, now and in the future, call upon the individual to learn problem-solving approaches in interpersonal and intergroup relations. The double-win strategy, applied to social relationships, depends on the acceptance of mutual interests and on positive approaches to resolving conflicts, whether between individuals or between groups. The alternative is more conflict and a mutual loss of security, freedom, and opportunity to enjoy the company of other people.

Implications of the future for the personal role. Everyone lives constantly and most intimately in a world of private experience. Therefore, what the future means for the individual has its most important expressions in this private world. External experiences with things and people and events shape one's private world, of course. But the important point is that within this private world, all experience is summed, interpreted and valued.

Futurologists who have looked at our emerging society and what it will mean to the individual tend to agree with Toffler that we live in a bewildering world of rapid change in which accustomed ways of adapting are no longer functional. Toffler (26) sees many people who, in response to change, react in non-rational ways. They turn to drugs, astrology, extreme subjectivism, and attacks on science for answers. A different approach to change is that described by Harman and others in their accounts of the cultural revolution. This latter approach is characterized by a positive thrust toward self-knowledge, self-actualization, and increased power and freedom through both private and social experience. The alternatives presented by these two viewpoints are central to a valid projection of what the future will mean for the individual as a person: will the course be to retreat from reality, or will it be to positively and creatively enhance both one's external and internal experience?

The development of the psychological sciences, together with improved techniques of developing oneself as an emotionally free and effective person, very likely will contribute to the selection of paths.

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CHAPTER II

FUTURE-ORIENTED THEMES FOR EDUCATION IN THE 1980'S

The foregoing projections about the future agree only in that they forecast universal and very rapid change in nearly all aspects of human society and that they are all uncertain as to which of the many alternatives will characterize the direction of change. The motto, "be prepared," clearly means that one must be capable of adapting to the unfamiliar and the unexpected in every area of living. The analysis given in Chapter I of the implications of changing society for the individual sets the stage for identifying educational themes that are relevant for preparing the learner to live effectively in the decades ahead. The themes chosen for emphasis now need to be related to the projected changes in the individual's economic, political, social, and personal roles.

The speakers at Research for Better Schools' two national symposia on education for the future contributed their thoughts on how education should change to take account of changing society. Collectively, their views are especially important because they are drawn from various disciplines and professions--economics, political science, law, sociology, psychology, biology, engineering, politics, psychiatry, and education. The following presentation of themes for future-oriented education pays particular attention to the speakers' contributions.

It is convenient to divide these themes into ends and means. The ends or goals that should receive emphasis in preparing the learner to encounter the future effectively and productively are listed first. They are then followed by a list of means or routes that should be given special emphasis in accomplishing the chosen ends.

GOALS OF EDUCATION FOR THE FUTURE

Education for the future does not require a new set of goals. Rather, projections of the future call for placing particular emphasis on a number of goal areas and then stressing particular sub-goals within them. The ten goal areas presented below are not meant as a complete set of learning goals for schools but as a selection of crucial learning areas in future-oriented education.

1. Problem-solving skills.

Considering the accelerating rate of change in knowledge, technologies, and social institutions, and the unpredictability of changes, it is obvious that education must prepare the individual to cope with the new rather than with the familiar in all aspects of living, including work, citizenship participation, social relationships, and one's personal life. Necessary problem-solving skills are analyzing the situations one confronts, considering alternative courses of action, making decisions, then planning and carrying out courses of action toward solutions. Several speakers at the RBS symposia placed strong emphasis on the need to teach problem-solving competencies. Daniel Bell sees the analysis of experience, rather than mere experiencing, critical for coping with the future. Buckminster Fuller makes a similar point in stressing that the most distinctive human attribute is the capacity to see relationships within phenomena. Problem-solving competencies depend on seeing relationships of cause and effect, of ends and means, and then acting on one's knowledge of such relationships. Senator Richard Schweiker emphasizes in particular the application of problem-solving skills to decision-making about careers. Elise Boulding places her stress on teaching skills in analyzing and resolving conflicts between individuals or groups. Robert Glaser (1) makes a fundamental point in his contention that basic intellectual aptitudes, commonly called intelligence, can be learned and, therefore, can be taught. He urges instruction in "basic psychological processes," and proposes "... that what is taught in school should involve the teaching of the processes involved in intelligence and aptitudes, as well as subject matter knowledge and skills."

2. Skills in self-managed learning and action.

The essence of a democratic society is that citizens are free to make and act on choices about issues that concern them. But such freedom is illusory if citizens lack the skills required for exercising such privileges. In view of the many changes that will be of critical importance to each member of our society, preserving and making good use of these privileges in the future will place increasing demands on the individual. Consequently, schools must assume responsibility for teaching students those qualities and skills that will enable them to take charge of their own affairs and not to passively allow others to make all their decisions for them.

Actions that serve one's interests and the interests of others depend on knowledge. Therefore, it is vital that the individual be capable of learning what is needed for making wise decisions and then carrying them out. Self-managed learning is essential and it is up to the schools to teach students the skills to direct both their school learning and, even more important, their learning in post-school life.

Self-managed learning depends on possessing those basic skills in language and number that are the focus of the elementary school program. When a student does not learn these skills at a functional level during the early years of schooling, as is the case today with a considerable proportion of students, he or she suffers two major handicaps--school learning is severely impeded and preparation for coping with life problems requiring such skills is either aborted or seriously delayed. Schools of the future must treat this as a matter of priority concern and provide instruction in basic skills to citizens of any age so that they can function as capable individuals.

3. Competency motivation.

A goal closely linked with both problem-solving and self-managed learning is motivation to achieve competence or excellence in learning and making use of what one has learned. The demands being placed on individuals in all areas of living make it increasingly important that each person be motivated to superior accomplishment of any activity he or she undertakes. Educational systems traditionally have played a key role in what John Gardner has termed a "sorting-out process" in which some succeed and many fail. Those who fail to "make the grade" both in school and in life come predominantly from the ranks of the economically, socially, and educationally disadvantaged. The consequences of incompetence for the individual and for society at-large are evident. For the individual, incompetence denies the privileges and successes others enjoy. For society, the incompetence of millions of individuals to function effectively in the major life roles gives rise to many critical problems that threaten society's very survival.

Two speakers at RBS' symposia particularly stressed the importance of education for competence. Elise Boulding (2), in proposing community-centered schools, calls for an intimate blending of formal education with the solution of real, community-based problems. In solving these problems, adults and children in the community become partners. She speaks of "... community schools in which children and adults alike learn the skills they need to function productively, and with self-respect and joy, in the region in which they live. In situations like this every adult becomes both a teacher and a learner, every child both an apprentice and a teacher of those younger than herself. The school itself becomes a skills center, linked to the community in numberless ways." The purpose of education-in-community, Dr. Boulding says, is to teach "competence" and "copability". Senator Richard Schweiker (3) introduced the concept of competence by quoting John Gardner's statement that "an excellent plumber is infinitely more admirable than an incompetent philosopher." He continued by contending that education today does not honor the craftsman and does not provide vocational education that prepares people for this field of work.

4. Career Education.

Traditionally, schools have given very limited attention to preparing students for the world of work. In educating students for work roles of the future, several points should be taken into account. Ralph Tyler (4) calls attention to the "sharp and continuing shifts in the occupational structure" that have resulted from applications of science and technology "Unskilled labor has largely disappeared. The production of material goods now requires less than one-third of the labor force, while the health services, education, recreation, social services, research and development, accounting, and administration employ nearly two-thirds." These changes require that education for work place strong emphasis on teaching problem-solving skills and on interpersonal relations rather than on skills in performing routine operations.

Senator Schweiker (5), in calling for more attention to career preparation in the schools claimed that, by 1980, this country will need 50 percent more professional and technical workers than it needs today, and that only one in five of them will require a college degree. Also, his information indicated that only about 30 percent of students currently receive vocational preparation that enables them to get a job upon leaving high school.

Also to be taken into consideration is that, on the average, a worker entering the job market can expect to make job changes requiring retraining five or six times during his or her life. Adult education must be offered to meet this demand.

5. Citizenship education.

The success, indeed the survival, of democratic government depends on a high level of citizen participation in making and implementing decisions that concern individuals, groups, and society generally. Today's numerous crisis problems-- unemployment, group conflict, crime, depletion of natural resources, pollution, corruption in government, blackmail by terrorist groups, international tensions, etc., -- can be expected to worsen unless powerful political action is taken. Education for effective citizenship requires that all students be taught to analyze issues and problems, compare alternative courses of action, and join with others in formulating and enforcing solutions.

In calling for "participatory democracy", Harold Shane (6) contends that "mutual coercion" will be necessary "to protect us from ourselves." The problem is not for citizens to find a common ground within our pluralistic society that will enhance the possibility of problem resolution. Shane holds that, if an "uncoerced group decision" is made, it is legitimate to use coercion to enforce it. What Salk terms the "double-win" strategy requires not only that contending groups find common bases of action but also that authority be used to enforce decisions of mutual interests.

Elise Boulding (7) calls particularly for the development of skills in conflict resolution or "peace-making." To quote her:

> Conflicts of interest, perceptual conflicts, preference conflicts, are ubiquitous in the human experience. We teach the three R's, we teach nutrition and hygiene, in every elementary school, yet we do not teach the ABC's of conflict. The fact that we are currently locked into what could be the final doomsday escalation of an absurd arms race with the Soviet Union, a decade and a half after carefully programmed and timed deescalation procedures were agreed upon, certainly indicates a crying need for new kinds of conflict specialists at governmental and intergovernmental levels.

Citizenship education, in the minds of many futurists, needs to provide an understanding of the continuing and growing conflicts between the haves and the have-nots in this country, and between the have and the have-not nations on the world-wide scene. Political decisions that do not take such fundamental conflicts into account are certain to be inadequate.

6. Interpersonal and intergroup attitudes and skills.

Many future forecasts agree that individuals, groups, and nations will become ever more interdependent in the economic, political, or social realm. The challenge to educational systems is to develop effective programs that teach the attitudes, values, and skills for positive and constructive interpersonal and intergroup relations. Our society shows many signs of undergoing a "cultural revolution." Central to this is an increase in overt group conflict as various disadvantaged segments of our society demand rights and privileges that have been denied them. The Civil Rights Revolution, currently focused on the issue of forced busing, is one continuing source of group conflict. The revolt of youth against adult-imposed authority is another. The women's movement is yet another focus of conflict.

The task for education is to teach understanding and acceptance of differences among individuals and skills in relating positively with others differing from oneself in age, sex, cultural background, education, beliefs, and values.

Skills in intergroup relations are as vital as interpersonal skills. An effective community requires that various groups work together to meet common needs including education, jobs, transportation, recreation, personal services, and physical safety. To counter tendencies toward growing disorganization of communities, community members must become active participants in groups representing different constituencies but who are all committed to finding humanistic solutions to problems of common concern. The educational system has a major responsibility for building such intergroup skills.

7. Values education.

An area of strong agreement among futurologists, as found by

Harold Shane (8) in his survey of 82 specialists in forecasting the future, is values or moral education. Shane's survey strongly recommends that "... an assault would be made on the strongly cemented redoubts of materialism; most specifically on the culture's misplaced confidence in materialism-- in 'consumer stuff'-- as the most important goal of life." Also, the schools should teach people to "... respond more adequately to the threat of damage to the biosphere; damage that could be profound and irreversible in a decade or two." Values education should also seek equity for all rather than hold the value that success is synonomous with equality among the top ten percent of the population. Furthermore, Shane proposed a stress on the values of a service-oriented society, on achieving personal satisfaction rather than possessions, and on excellence or craftsmanship.

Jonas Salk offered an orientation for values education by calling for quality over quantity, and for moving away from ego values to values related to being. Representative Shirley Chisholm placed her emphasis in values education on teaching respect for differences in our pluralistic society.

Values education has a place in most of the other themes on this list. Thus one's values are intimately involved in career choices, in citizenship behavior, in interpersonal and intergroup relations, and in competency motivation. It is also evident that values education will be most effective and most useful when closely linked with the educational approaches used to foster these related themes.

8. Psychological education.

Achieving an integrated and personally satisfying set of attitudes and values and a productive style of life is especially difficult under conditions of very rapid societal change. Learning to look at oneself objectively, to examine the consequences of various courses of action, and to choose and act upon what promises to yield a sense of personal worth as well as satisfying experience, are critical requirements for arriving at personality integration that exercises freedom and initiative rather than passive conformity to external pressures.

Building a rich inner life is always important. And, it may become even more important if the future brings greater regimentation and restriction of outward freedoms. The "psychological revolution" in today's society points the way and suggests methods of getting there. The turning of many people, especially the young, toward eastern societies for models in Yoga and other disciplines is not merely escapist; it offers ways of slowing down, exploring unfamiliar inner resources for satisfying experience, and learning skills of body, mind, and emotional control.

A key to psychological education is allowing a great diversity of individual values, interests, and styles of coping with the world. One aspect of individuality in our pluralistic society is cultural identity; that is, identification with the traditions, values and customs of one's ethnic or cultural group.

Shane, in his survey of futurologists, found that a number of them called for a "personalized" educational program " . . . which concentrates on the learner's optimum development rather than merely focusing on attempts to bring him up to group norms." Also, he encountered a stress on building in the learner a positive self-image. Harman's analysis of the "cultural revolution," summarized in the preceding chapter, clearly calls for education to build in each student such characteristics as openness, sensitivity, spontaneity, self-honesty, and integrity.

9. Education for leisure.

Futurologists are not in agreement about whether the work week will, on the average, become much shorter in the years ahead. Probably the managerial class will continue to work a full week. The same may well be true of the increasing numbers of workers in service occupations. Still, there is reason for stressing education for leisure and it lies in Harman's forecast of a "person-centered" society. A society that has this focus must give every student a rich fare of educational opportunities to develop varied interests and competencies for avocational and recreational activities.

10. A future-focused role image (FFRI).

Harold Shane (9) sees one critical failure of today's educational systems to be "... our failure to help children and youth develop a personally, socially, and vocationally satisfying self image that will prove to be realistic as they grow older." FFRI, he says, should give particular attention to vocational goals.

> The lack of a viable future-focused role image poses a task of considerable consequence to our schools as they endeavor to motivate more young learners to conceive of themselves in tomorrow's world of work—a future in which they experience dignity, respect, and other rewards in any one of many socially useful jobs rather than wistfully longing for one of the so-called prestige jobs, which require and employ only a small fraction of our manpower as professionals workers, executives, owners, and entrepreneurs.

Other components of the FFRI that appear to be equally important are those dealing with one's conception of self in relation to self-interest versus service to others, and one's conception of a satisfying personal life.

The over-all educational goal in a future-focused role image is that of helping the learner achieve a projection of life in the decades ahead that integrates perceptions of needs and values with perceptions of the opportunities and problems in living. The study of societal change, past and present, and its implications for the individual, can provide one essential basis for developing a realistic image of self and future.

MEANS FOR ACHIEVING GOALS OF EDUCATION FOR THE FUTURE

For education, the past quarter-century has been a period of innovation reaching into virtually every aspect of schooling--curriculum, plant and equipment, organization for instruction, school/community relations, and decision-making agencies and processes. The great array of innovations that have been developed and tried out in schools provides innovative educational systems with rich resources for achieving each of the ten educational goals for the future that have just been described. The problem of bringing about needed changes in school systems thus chiefly becomes one of designing and implementing local change programs that make effective use of resources that already are available.

The innovations referred to here have mainly been created outside of "the educational establishment" of school systems and state education departments under grants from the federal government (National Science Foundation, U.S. Office of Education, and National Institutute of Education), private foundations (Ford, Rockefeller, Carnegie, Kettering, etc.), and by project teams working in agencies such as research and development centers, regional educational laboratories, universities, or private firms such as American Institutes for Research and Educational Testing Service. Still, some innovations have been generated by state education departments and in local school systems. Frequently, innovations have been stimulated, if not created, as the result of community pressures. One example of this is school decentralization in cities such as New York.

The resources for strengthening school systems are reviewed here under six major headings, accompanied by the appropriate goal areas for each.

1. Innovations in curriculum and instruction.

Innovations in curriculum and instruction have made it possible to achieve all ten goals listed above with the exception of two: education for

for leisure and education for a future-focused role image.

Problem-solving skills. The most pervasive theme in curriculum reform during the past two decades has been problem-solving or enquiry. This theme has been a curricular focus for both elementary and secondary schools in mathematics, science, and the social studies. In mathematics, the Madison Project under Robert Davis and the School Mathematics Study Group under E. G. Begle are representative of this approach. In science, there are numerous enquiry-focused curricula including, at the elementary level, Science--A Process Approach developed by the American Association for the Advancement of Science and Individualized Science developed jointly by the Learning Research and Development Center at the University of Pittsburgh and Research for Better Schools. At the secondary level, there is the physics curriculum prepared by the Physical Sciences Study Committee (PSSC) and the biology program prepared by the Biological Sciences Curriculum Study (BSCS).

In the social studies, representative elementary curricula are Man--A Course of Study developed under the leadership of Jerome Bruner and the Social Science Laboratory Units prepared by Lippitt and Fox at the University of Michigan. Enquiry-focused secondary curricula have been developed for instruction in economics, geography, anthropology, history, and political science.

One elementary program meriting special mention is the Productive Thinking Program developed by Crutchfield and Covington. This program teaches elementary children general skills in problem-solving, using the solution of mysteries as subject matter. A comparable program developed at Research for Better Schools is Making Judgements.

Unfortunately, there is no compendium offering school systems a comprehensive review of enquiry-focused curricula. The nearest to this is A Sourcebook of Elementary Curricula, Programs, and Projects prepared by the ALERT Information System at the Far West Regional Educational Laboratory in San Francisco.

Self-directed learning and competency motivation. Student self-direction is a major feature of enquiry-focused curricula. Most of these curricula, at both elementary and secondary levels, employ a project approach in which students, either singly or in small teams, plan and conduct their learning tasks.

Self-directed learning is also a feature of programmed instructional materials in which the materials themselves give students sufficient clues that permit them to proceed with a minimum of teacher direction. Several individualized programs, including IPI, PLAN, and IGE, contain materials and procedures calling for a high degree of student self-direction.

There is a growing frequency of programs of independent study at the high school level that depend on student self-direction. A pioneer program of this sort is that developed by B. Frank Brown at Melbourne High School in Florida.

Teaching competency motivation, or mastery, is the purpose of an elementary curriculum called Achievement Competence Training (ACT) developed by Research for Better Schools. ACT teaches students to set their own learning goals, to plan how to achieve them, and then to carry out their plans using success as the criterion for accomplishment.

Evidence that nearly all students can achieve high standards of performance comes from several individualized instructional programs that require each student to satisfy a mastery criterion for each learning task before proceeding to the next task. In recent research, Benjamin Bloom (10) has demonstrated that a mastery criterion can be reached by a high percentage of students if they are given appropriate learning tasks and allowed the amount of time and practice they require.

Career education. Preparing students for occupations is a rapidly growing concern in the public schools. The National Institute of Education's research and development program in career education employs four models: one school-based, another employer-based, a third home-based, and the fourth rural-residential-based. An example of the employer-based model is Philadelphia's Academy for Career Education, a joint project of Research for Better Schools, the School District of Philadelphia, and the Greater Philadelphia Chamber of Commerce. Tenth through twelfth grade students are enrolled in the program. Instruction consists of a core program in basic skills, career guidance, career exploration, and work experience with a variety of Philadelphia employers.

Citizenship education. A considerable number of recent curriculum developments center on political education. The November 1972 issue of Social Education describes four representative programs of this sort. University of California at Los Angeles has produced three paperbacks, which "focus on the concepts, processes, and principles of the American political system." Each contains case studies on controversial political issues. Indiana University's High School Curriculum Center in Government has developed a one-year course in American Political Behavior for grades 9-12. Lincoln Filene Center for Citizenship and Public Affairs at Tufts University has developed a High School Social Studies Program that deals with national and international problems as they relate to the governing process. Utah State University has developed a program based on the work of Oliver and Shaver at the Harvard Social Studies Project.

Interpersonal and intergroup education. Numerous human relations curricula have been created for both elementary and secondary schools. The Lippit-Fox Social Studies Laboratory Units, referred to earlier, focus on the study of individual differences, attitudes towards others, and relationships with others. The Lincoln Filene Center for Citizenship and Public Affairs at Tufts University has created the K-6 Intergroup Relations Curriculum. The goals of this curriculum are to decrease prejudice and discrimination, to make children aware of cultural and ethnic differences, and to provide a realistic presentation of the contributions of America's many ethnic groups. Mosher and Sprinthall, while at Harvard University, developed a course in psychological education for secondary school students that includes a section called The Psychology of Interpersonal Behavior, an intensive experience in a self-analytic group.

Two excellent publications give overviews of the problems of ethnic education and describe numerous approaches that have been used to teach positive interpersonal and intergroup relations among different cultures. One is Ethnic Modification of the Curriculum by Maxine Dunfee published in 1970 by the Association for Supervision and Curriculum Development while the other is Teaching Ethnic Studies published in 1970 by the National Council for the Social Studies as its 43rd Yearbook. ASCD offers Eliminating Ethnic Bias in Instructional Materials. The October 1974 issue of Educational Leadership contains 11 articles on the theme Human Relations Curriculum - Teaching Students to Care and Feel and Relate. This is a rich source of descriptions of such curricula.

Values education. A great many futurologists see a need for values education. Very recently, a considerable number of projects have been established to develop curricula in this area.

Lawrence Kohlberg (11) offers a basis for developing a values education curriculum by proposing that there are six stages in moral development. His stages go from obeying rules to avoid punishment through conforming to avoid disapproval to conforming to avoid self-condemnation.

One promising approach to values education is Research for Better Schools' Ethical/Moral Action Instructional Program. This program recognizes these essential values:

Self: The individual should value self, self-growth, and self-well being of others.

Objectivity: The individual should value objectivity as represented by empiric descriptions of reality.

Society: Individuals should value the welfare of the social community.

Justice: Individuals should value justice for all individuals equally.

Mercy: Individuals should value mercy for all individuals equally.

The program, being developed for junior high school students, uses a strategy of six steps: value naming, getting action ideas, making ideas workable, considering others, acting and reflecting on the effects of action.

Values education properly is an aspect of education directed toward most of the goals on the list of ten being considered. Thus, education for competence motivation, for citizenship, for interpersonal and intergroup relations, or psychological education foster self-valuing.

Psychological education. There is a growing emphasis on "affective education" in American schools. One example is the work of Mosher and Sprinthall (12) who developed a set of courses for high school juniors and seniors. Students elect one of a number of laboratories, or experience-based courses in psychology and the humanities. The following excerpt from their article describes the laboratories.

> Improvisation Drama involves the student in the exploration, through theatre improvisation and drama, of his own and others' behavior. The Psychology of Interpersonal Behavior is an intensive experience in a self-analytic group and group process. A Laboratory in Teaching involves the teaching of children (and adults) in a variety of settings (e.g., institutionalized mentally retarded children, normal elementary school children, geriatric patients in a mental institution). A Seminar and Practicum in Counseling involves studying theory and practice of counseling and, under supervision, counseling younger

adolescents. Communication and the Art of the Motion Picture is the study of films ... about adolescents or young children done with intense realism. A Laboratory in Child Development and Child Care involves studying the psychology of child development in conjunction with operating a nursery school.

In the future, we can expect the development of curriculum materials for elementary and secondary schools that deal with such psychological matters as self-awareness, meditation, and philosophy of life--current preoccupations of millions of adults who are seeking to enhance their inner experience.

Education for Leisure. While course work designed to foster productive and enjoyable uses of leisure time probably is a rarity today, one would have no difficulty in assembling a rich supply of materials suited to this purpose. The whole array of educational offerings in avocational and recreational pursuits is relevant. The task of building this emphasis into the instructional program does not include developing new curricula but only bringing together existing curricula that cover the great variety of hobby interests-- photography, radio, music, dance, theatre, literature, stamp collecting, tennis, hiking, and horticulture. Once education for leisure is given a formal place in the school program, an individual guidance process is needed to help each student identify and develop a set of avocational/recreational areas of expression. Not to be neglected is the area of service to others, or of participation in such areas as politics.

Building a future-focused role image. Teaching students to project themselves into the future has, to this point, mainly been related to career planning. "What do you want to be when you grow up?" is a question that both parents and teachers frequently ask. But a future-focused role image also calls for broadening the base of one's projections to cover other life roles including citizenship, family membership, community membership, and one's personal life. Further, one's FFRI should take account of anticipated changes in society that will limit or extend opportunities for a satisfying life. The sort of curriculum suited to meet these requirements has not yet been built, though there are beginning outlines of what it should be like.

Harold and June Shane (13) recommend that the possible "history of the future" be a focus of instruction. To quote them:

> Schooling should be designed so that the possible history of the future--carefully reasoned projections or comceptions of developments that man can probably bring about--become part of the curriculum. Such scenarios of possible futures, with children of twelve or younger, could lend meaning to the present by exploring its possibilities for future development, and sharpen past history by showing how, say, such topics as the Age of Exploration in the 1500's or the Westward Movement of the 1800's foreshadowed and shaped our ancestors' tomorrows and our own yesterdays.

To help students develop a realistic orientation toward the future, schools must provide a program of educational guidance at each level of schooling wherein students can examine their aspirations and how they relate to probable changes in opportunities for role fulfillment.

2. Innovations in educational technology.

Developments in communication technology should play a prominent role in planning schools for the future. Such developments promise to improve greatly the effectiveness and efficiency of learning as well as change the settings in which learning takes place. It appears safe to predict that technological advances will enable students of all ages to rely less on teachers for instruction and decrease the necessity to learn at school rather than at home or in other locations.

Many recently-developed forms of educational technology have been widely employed in instructional programs: educational TV, audiotapes, film strips, programmed instructional materials, language laboratories, dial-access systems, and microfiche. Computer-aided instruction in basic skills has shown great promise, though its costs have delayed widespread adoption. Computer management of instruction has been more extensively employed, particularly in school record systems, in scheduling, and in planning and monitoring instruction in individualized systems such as Program for Learning in Accordance with Needs (PLAN).

Kahn and Wiener (14), in their list of "One Hundred Technical Innovations Likely in the Next Thirty-Three Years" (1967-2000), foresee the development of three-dimensional photography, illustrations, movies, and television; simple, inexpensive video recording and playing; and home education via video and computerized and programmed learning. They forecast the creation of chemical and mechanical methods for improving memory, learning, and analytic ability. Several of the technologies they project call to mind the need to manage the uses of technology in the human interest lest "thought control" be a result. This particularly is the case with "practical use of direct electronic communication with and stimulation of the brain," and "new and more reliable 'educational' and propaganda techniques for affecting human behavior--public and private."

Overall, the most pervasive uses of the new educational technologies in education contribute to individualizing instruction by fostering self-managed learning and by offering alternative visual and auditory channels that supplement teacher-directed instruction.

Patrick Suppes (15) sees prospects of using technology to achieve "home-based learning." In his view, television is the chief medium. "Because of its enormous success, it is reasonable to say that the next step forward will be to bring all the educational background, all the teaching and curriculum that a student will want, directly into the home via television." He reports that computer terminals also can be installed in homes to permit home study.

In projecting uses of educational technology in the coming decades, a report from Stanford Research Institute (16) warns that schools are likely to make extensive uses of technology only under special conditions. "Large scale and effective use of technology will await fundamental changes in school organization that seem unlikely in the near future. The most promising uses of technology might be in areas outside the one that we have investigated, i.e., in higher education and in the education of special-need groups." If these authors are correct, innovations in educational technology are most apt to become widely used if today's school systems are supplemented or replaced by educational opportunities outside formal schools, perhaps as outgrowths of greater student or community control of the educational process.

3. Innovations in organization for learning.

Among the instructional resources developed and tested during the past quarter-century are several advances in organizing instructional programs. These have been reviewed by Heathers (17). His article gives particular attention to programs of individualized instruction such as IPI and PLAN that tailor-make lessons to the individual student and stress self-managed learning. Also, the article emphasizes cooperative teaching plans that accent staff differentiation and staff cooperating in planning and conducting instruction.

Other organizational arrangements that should be considered in planning schools of the future include "schools within a school" or "mini-schools" that contribute to individualizing or personalizing education. Also included should be alternative programs or schools within a school system designed to meet the needs of special student populations. Magnet high schools that offer specialized curricula are taking this route.

4. Innovations in school/community relations.

In recent years, one of the most prominent educational trends has been a move toward greater community participation in the conduct of instruction and in decision making about the school system's program.

This trend received national attention during the desegregation of the New York City School System when representative district school boards were given broad powers to act on the interests of minority groups. In other cities also, minority-group demands have altered the public schools, so that key decisions now reflect community concerns. An excellent summary of this process, up to 1973, is given by Ornstein (18).

> Of 65 large school systems responding to his survey, 39 were decentralized and 62 reported increased community participation, though only two reported some form of community control.

Increasingly, community members have been moving into the schools, and school programs have been moving out into the community. Paraprofessional participation has brought thousands of parents and other community members into schools in every major city. Furthermore, many paraprofessionals have entered training programs leading to careers as certified teachers.

Equally striking has been the trend toward taking portions of the school program out into the community. Secondary career education programs wherein students hold jobs in business organizations or in community agencies are an outstanding form of such community involvement. The community school movement is still another kind of community participation. Educational Facilities Laboratory in New York City has a publication Community/School that surveys this movement. An article derived from this publication, in Nation's Schools, describes three such programs and identifies four common features:

> 1) a building designed to joint specifications of school and community representatives and operated as a partnership; 2) facilities shared by school and community organizations; 3) a joint financing plan that provides greater working capital; 4) a centralized administration that acts as liaison and mediator between agencies and assists in integrating programs.

An even fuller expression of community participation and control has been the free school or alternative school movement where community members have set up schools to serve the needs of students who were "tune-outs" or drop-outs from the public schools.

Another form of community control in education that has been proposed, though seldom implemented, is the voucher plan wherein the parents are given a voucher for a sum equal to what the public school system receives for educating a student. Under this plan, parents are free to use the voucher to enroll the student in any accredited school of their choice, whether public or private.

Since 1954, when the Brown decision launched the movement to desegregate the nation's schools, the most explosive area of community involvement has involved racial balancing of schools by busing. This issue has made abundantly clear that "community" consists of different constituencies who speak with quite different voices. Issues other than racial desegregation that have aroused the intensive concern of community groups include educational quality (at the elementary level, the failure to teach basic skills; at the secondary level, the failure to prepare students either for jobs or for entrance to college), school violence, and school financing. Realistic plans for schools of the future will need to recognize these problems and involve the community in any major programs designed to improve education.

5. Innovations in students' rights and participation in decision-making.

Paralleling increased community involvement in school decision-making is the national movement to enhance students' rights and to give students a major share in making decisions about their programs of study. The recent Goss and Wood decisions of the U.S. Supreme Court have formally established the obligation of school administrators and teachers to honor students' constitutional rights with respect to disciplinary actions. The current conception of student rights, however, goes beyond matters of discipline to include access to and control over personal school records;

freedom from arbitrary seach of one's person or possessions; freedom to possess and distribute literature; freedom of expression including dress and grooming; freedom of religious expression; and equal opportunity to participate in any school program. A particular case in point is the Supreme Court decision guaranteeing females equality of access to physical education and athletic activities. An excellent review of issues of students rights and "A Sample Student Code" is presented in the December 1974 issue of the Phi Delta Kappan.

Particularly at the secondary level, there is a major trend to give students the opportunity to share in decisions about their programs of study. Three Baltimore schools in which seventh to twelfth graders choose the courses they take each semester illustrate this. The program, developed by the Center for Social Organization of Schools, uses a computer-based information system that assists in scheduling, reporting, and testing. The program plan provides for students choosing not only their courses but also their teachers, the difficulty level of each course, and the use of free periods for independent study.

An article by Harry Silberman, "Involving the Young," in the May 1975 issue of Phi Delta Kappan gives an excellent analysis of the preparation of young people to assume responsibility and to follow society's rules. Silberman points out that Chin and the Synanon Foundation offer models for giving young people more freedom with responsibility. Still another approach is the open-compus high school, which grants students a great deal of freedom of movement during the school day.

6. Innovations in planning and conducting change programs.

The Elementary and Secondary Education Act of 1965 has stimulated the development of many training materials and programs in leadership for local educational change. The Training Branch, established in the U.S. Office of Education and later transferred to the National Institute of Education, has played a major role in funding projects that deal with change strategies and the training of change agents.

Currently, there is a rich bank of resources for improving the change capabilities of educational leaders, whether they are on the staffs of school districts, state education departments, universities, regional educational laboratories, education information centers, or private consulting firms. In addition, procedures such as the Delphi technique have been developed whereby community groups can examine future educational needs and recommend appropriate changes for the schools.

The training materials or handbooks for planning that have become available include Ronald and Mary Havelock's Training for Change Agents. Also, three regional educational laboratories have been especially active in developing such training materials and programs: the Northwest Regional Educational Laboratory in Portland, Oregon; the Far West Laboratory for Educational Research and Development in San Francisco; and Research for Better Schools in Philadelphia. Research for Better Schools' work in this area includes a Handbook of Comprehensive Planning in Schools and a ten-unit series for Training for Leadership in Local Educational Improvement Programs. The main feature of the various training packages or planning handbooks is the utilization of problem-solving models that proceed through needs analysis, resources searches, choice of changes to be made, and detailed planning for implementing the changes selected.

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CHAPTER III

ALTERNATIVE DESIGNS FOR EDUCATION OF THE FUTURE

The four models for schools of the future in the following chapters have been designed to respond to both the societal trends outlined in Chapter I and the educational issues outlined in Chapter II. Each reflects its author's selection and interpretation of these trends and means of incorporating them into innovative educational programs.

The designs stem from a number of sources. The speakers at the two RBS national symposia contributed perspectives on both societal change and the directions education should take. The literature of futurology and educational innovation also were heavily drawn on.

Important contributions came from the consortium of over 100 innovative school districts formed as part of the RBS Planning Schools for the Future project. Consortium districts made many recommendations about school needs in the 1980's through two surveys. In one survey, to which 50 school districts responded, priorities for the future were assigned to "making students knowledgeable about future societal problems," "providing students problem-solving experiences in real world situations," and "exposing students to increasing world interdependence and global education."

In a second survey, to which 52 school districts responded, curriculum goals that received high priority were basic skills, development of human potential, interpersonal skills, personal values and social conscience, and cognitive competencies. Among administrative provisions, consortium members ranked the individualization of instruction first. With respect to local planning and development activities for making the needed changes, the most crucial tasks cited by respondents were staff development and school-community planning. These survey findings are presented graphically in the charts that follow. In each chart, current importance is represented in the left section of the bar while priority for the future is represented by the cross-hatched section at the right. All average ratings were above the middle position on a 5-point scale, "to a moderate degree," represented numerically by the value 3.0.

CHART I. CURRICULUM GOALS: CURRENT IMPORTANCE AND PRIORITY FOR THE FUTURE

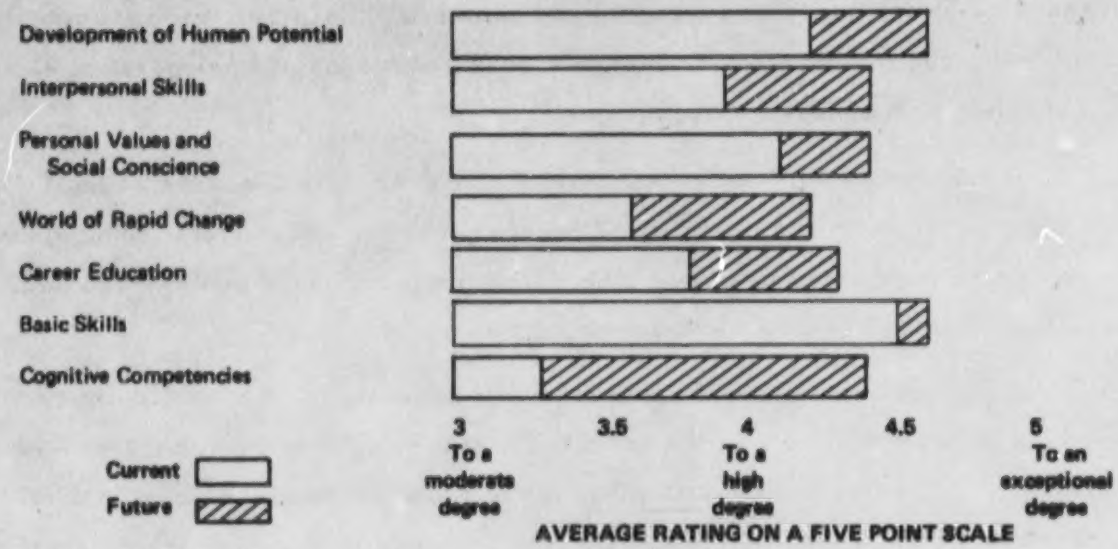


CHART II. ADMINISTRATIVE PROVISIONS: CURRENT IMPORTANCE AND PRIORITY FOR THE FUTURE

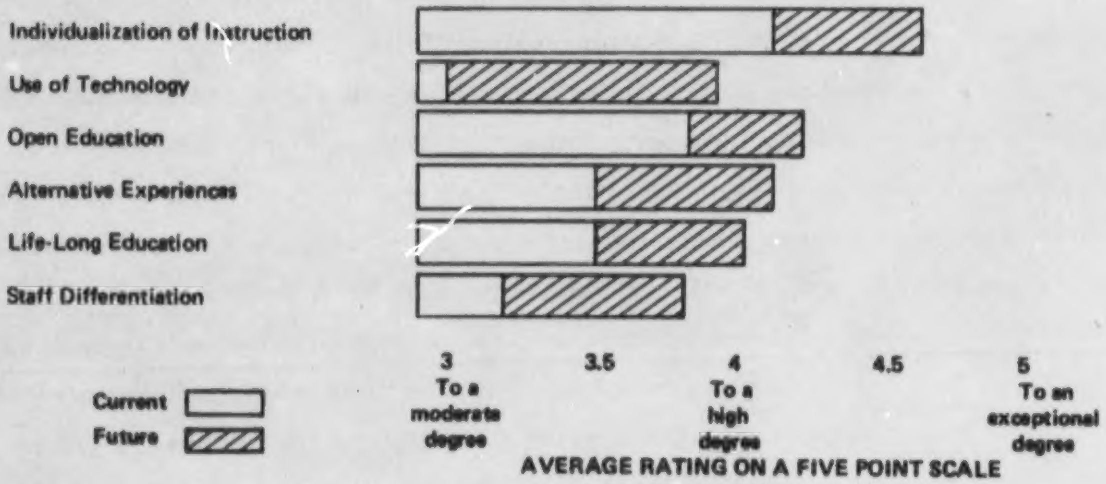
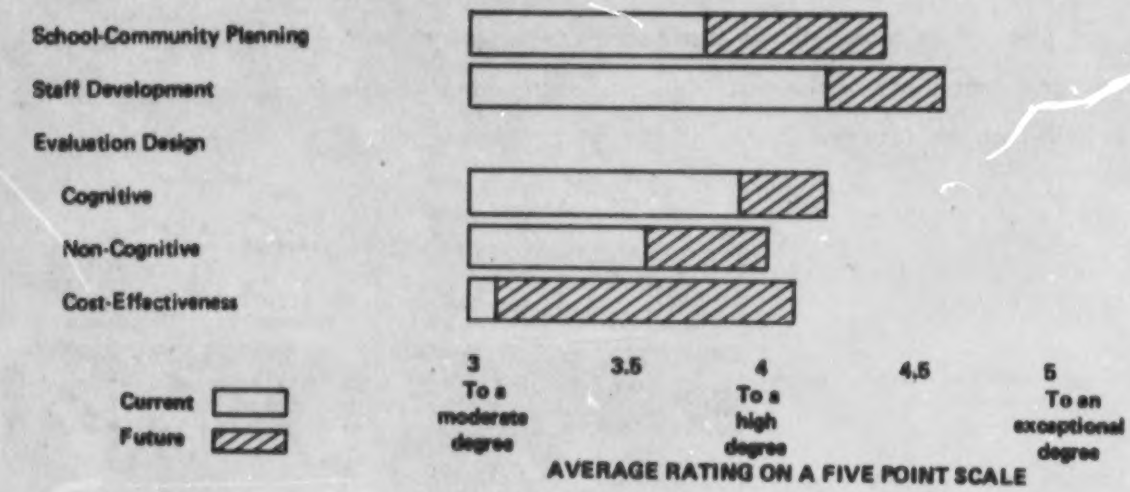


CHART III. PLANNING AND DEVELOPMENT ACTIVITIES: CURRENT IMPORTANCE AND PRIORITY FOR THE FUTURE

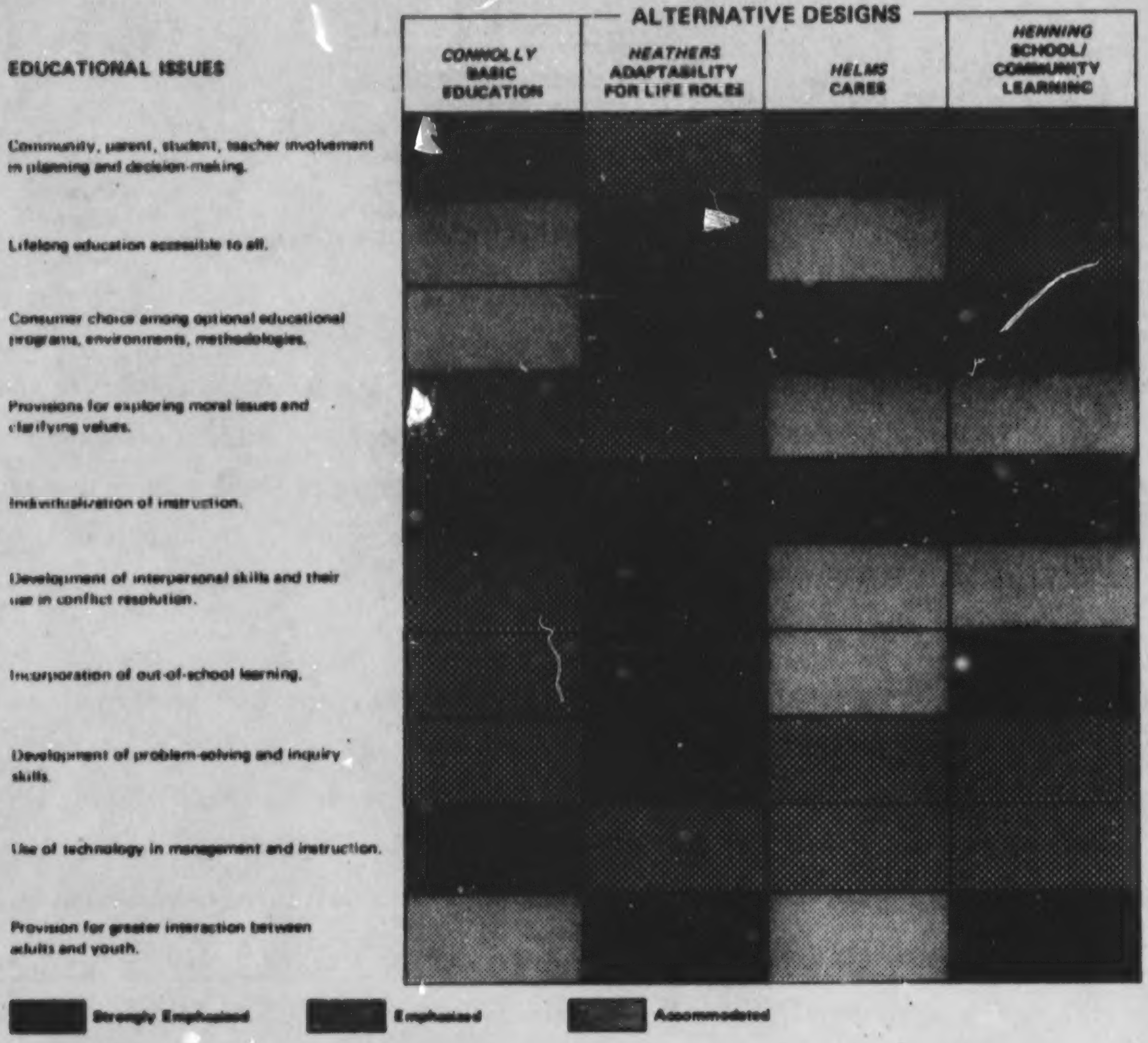


Representatives from the consortium offered specific reactions to the four designs for schools of the future at a one-day invitational workshop held at RBS in February 1975. Workshop participants from different districts reacted favorably but differently to the four plans, thus indicating that local needs and readiness would be a basis for selecting one particular design over the others.

A second workshop outcome was the notion that particular elements of the four designs could be selected and put together to form yet another, unique, design suited to a particular district's needs. In this regard, it should be noted that the designs represent skeletons or bare frameworks that give a school district a starting point for its own innovative planning.

The authors of the designs, members of the staff of Research for Better Schools, necessarily reflected their experiences in RBS development activities. As would be expected, the plans have been influenced strongly by RBS program development in individualizing and humanizing education, as well as by its work in educational technology, career education, and leadership for local educational change.

The Chart that follows indicates the extent to which each of the four designs emphasizes the ten "educational issues" confronting planners of schools of the future.



EDUCATIONAL ISSUES	ALTERNATIVE DESIGNS			
	CONNOLLY BASIC EDUCATION	*HEATHERS* ADAPTABILITY FOR LIFE ROLES	*HELMS* CARES	*HENNING* SCHOOL/ COMMUNITY LEARNING
Community, parent, student, teacher involvement in planning and decision-making.	■	▦	■	■
Lifelong education accessible to all.	░	■	░	▦
Consumer choice among optional educational programs, environments, methodologies.	░	■	■	■
Provisions for exploring moral issues and clarifying values.	▦	▦	░	░
Individualization of instruction.	■	■	■	■
Development of interpersonal skills and their use in conflict resolution.	▦	■	░	░
Incorporation of out-of-school learning.	▦	■	░	■
Development of problem-solving and inquiry skills.	▦	■	▦	▦
Use of technology in management and instruction.	■	▦	▦	▦
Provision for greater interaction between adults and youth.	░	■	░	■

■ Strongly Emphasized ▦ Emphasized ░ Accommodated

In studying the designs, it is important to take account of the design elements the authors were requested to include, and of the constraints they were asked to honor. The design elements to be included were a statement of the author's conception of the future and an outline of an instructional program related to this conception, including learning goals, organization for instruction, and instructional procedures.

Four assumptions imposed constraints on the designers: (1) schools will remain the main locus of formal education in the 1980's, although there will be an increased use of community resources; (2) the designs could not require the building of new physical plants; (3) the designs should require only hardware and software technology that will be available by the 1980's; (4) the designs should be implementable during the 1980's, meaning, of course, that any research and development tasks involved in a design must be completed during the next five or ten years.

MASTERING BASIC SKILLS BY JOHN A. CONNOLLY

John A. Connolly brings to the model building task a long-standing interest in the application of technology to the solution of problems in basic education. Dr. Connolly couples an academic background in educational psychology with experience in designing a variety of instructional systems including a computer-managed instructional system for teaching basic skills in the Philadelphia School District and an employer-based career education system. More recently, he has been working on applications of technology to a wider range of problems in education.

Dr. Connolly's design is based on a vision of the near future that includes proliferation of alternative forms of education, confrontations between educators and taxpayers over cost/effectiveness issues, and emphasis on basic skills. As he sees it, the current movements toward decentralization, local autonomy, and alternative schools will probably result in acceleration of the trend toward diversification of educational goals, methods and materials. Nonetheless, he argues, even widely differing educational philosophies will share some common concerns related to student acquisition of certain essential skills.

The Basic Skills model emphasizes a practical approach to some predictable educational needs. It integrates into a single program a number of existing concepts, techniques, and curriculum structures which have demonstrated validity for use in schools and provides a technology base for each program element.

The entire program focuses on the development of certain essential skills which are viewed as critically important for success in school and later in life. These basic skills include not only the traditional cognitive skills in reading, writing and arithmetic, but also some essential skills in affective and career areas. Specific instructional content is provided under three major program components (i.e. cognitive skills, life skills and career skills), to include most of the critical skills suggested by educational theorists, educators in field situations, and parents.

The program is designed to insure that every student masters the essential skills. Minimum standards of performance are defined in each of the essential skill areas by educators and parents in the local school situation. All students are provided with a highly individualized instructional program which leads to mastery of these criterion-referenced objectives.

The program design calls for extensive use of systematic processes to individualize instruction, enhance effectiveness, and reduce costs. An existing instructional model with well-defined objectives and structured educational procedures is suggested for each program element. In addition the instructional process in each program element is either managed or assisted with the aid of electronic technology such as computers and instructional television.

The design encompasses a relatively small part of the larger instructional program in schools. It covers the full range of grades in elementary and secondary schools with cognitive skills at the lower school level (grades 1-4) life skills at the middle school level (grades 5-8) and career skills at the upper level (grades 9-12). All instructional activities are designed for settings other than the traditional classroom. The instructional staff in all program components serve as facilitators or managers of learning rather than teachers.

Obtaining the curriculum needed for the program is primarily viewed as a process involving adapting existing materials rather than developing new materials. Existing learning units will be structured and sequenced according to a defined path leading to mastery of a particular objective. A comprehensive instructional management system would be developed to integrate the entire program into a coherent learning approach.

The program is designed to meet certain practical criteria for successful use in schools. Schools will not accept a program which involves either higher costs or lower effectiveness than conventional classroom instruction.

Nor will they accept a program which causes serious management problems, teacher resentment, or parental dissatisfaction. These practical constraints will guide the development of the program.

A planned program of educational change for the introduction of the program into school settings is incorporated in the design. It involves validation of the program, staff development programs, and prototype demonstrations in operational school sites.

EDUCATION FOR ADAPTABILITY IN LIFE ROLES BY GLEN HEATHERS

Glen Heathers believes that education for the future must take account of major societal trends involving increasing complexity, rapid change, uncertainty, and mounting social problems that threaten the very existence of our democratic way of life. The challenge, according to Heathers, is to promote education for adaptability to change, rather than adaptation to a conventional world. In light of these requirements he has developed a design for education that focuses on preparation for performing life roles within a changing society; that provides an array of special-purpose learning centers; and that stresses the use of educational counselors to guide student decision-making and to coordinate individual student programs.

In creating his design, Dr. Heathers draws upon his academic background in personality and social psychology; extensive research experience in emotional development in children, the socialization process, and individualized instruction; and long-standing involvement in educational innovation. He is currently engaged in creating training materials for leaders of educational change in local school systems.

As a psychologist concerned with how the individual develops as a person and as a responsible social being, Dr. Heathers has created a model that focuses on fostering both individuality and social participation, with special attention given to the development of competence in life roles.

He reasons that since every person's life is organized into a number of major roles, competence in performing these roles is essential both for self-actualization and for valid social involvement. The roles receiving attention in this model are those of learner, worker, citizen, community member, family member and private person.

In describing the organizational structure of his educational system, Dr. Heathers makes a distinction between schools as centers for planning and managing instruction and learning centers where instruction takes place. He proposes that the term "school" be used to identify a center for guiding and coordinating the instruction provided the student population, with learning centers being made available to offer the needed instruction. He calls for centers for skill learning, psychological education, academic inquiry, social learning, and career education.

The function of a school according to this proposal is "educational guidance" of members of its student population. This involves diagnosing each student's learning needs and learner characteristics in relation to the educational aims for which the school assumes responsibility, planning with the student a general program of studies, making needed arrangements for conducting the program, assisting the student with problems encountered, and assessing over-all progress as a basis for further planning.

This design calls for curriculum giving attention first to basic skills in communication and number, then to competencies in self-managed learning and problem solving as related to academic studies, career, citizenship, interpersonal and intergroup relations, social problems, and personal development.

The design offered by Dr. Heathers breaks from traditional schooling through treating the student as client rather than ward of the system, giving him a major role in decisions about his instructional program; through integrating school and community; through offering instruction on a year-round basis; through fusing the education offered children and adults of all ages; and through making the educational system accountable for achieving its intended outcomes.

SCHOOL/COMMUNITY LEARNING COALITION BY PATRICIA HENNING

This design for education in the 1980's is being developed by Patricia Henning. As a member of the School Adapted to Individualized Learning staff she has been collecting and analyzing the literature on social and educational trends, and reviewing information on school practice as communicated through surveys of schools in the consortium.

The emerging society that she perceives is full of uncertainty, conflict, and diversity; social interdependence and complex social problems coexist with personal alienation and feelings of helplessness; changing requirements of the labor market necessitate frequent retraining and continuous up-dating of professional knowledge; expanded communications media bring into the home more information than people are equipped to assimilate and use.

Ms. Henning's model addresses what she considers an urgent need to break down the barriers between school and community, to utilize the untapped human resources of skills, knowledge, and experience within the community and channel these toward the development of competence and problem-solving ability in students.

This model is designed to reintegrate the school into the community by developing a partnership between the local school system and a coalition of community groups. Each partner bears responsibility for certain elements of the overall design. By working together in a synergistic relationship the parties jointly contribute to the socialization of youth and the humanization and enrichment of the learning environment within the school and in the immediate community.

The general plan calls for heavy involvement of community organizations, local residents, business and labor, educational and cultural institutions, government agencies and public schools in an integrated learning, planning, renewal system. Its basic requirements are: identifying and cataloging all learning opportunities available in the community; mobilizing the community to create new opportunities; merging all educational resources into a coherent educational force; and organizing and guiding the learner to use these resources effectively.

Planning for the future and continuous community renewal provide the central focus for the involvement of diverse interest groups. The education of participants regarding social and economic trends and the planning process, as well as training for specific tasks are integral elements of the proposal. They serve to develop an enlightened citizenry with a common frame of reference, while strengthening the group's capacity for carrying out its renewal plans.

Neighborhood Learning Centers constitute learning sites for citizens of all ages, thus fostering communication among age groups and promoting more extensive use of the libraries, laboratories, studios, museums, and other facilities housed in the centers. Internships, apprenticeships, community service activities and student-managed businesses extend opportunities for experiential learning into the community. Learners are linked to a network of local, regional, national and global learning resources.

The instructional program provides a wide variety of learning environments, instructional techniques, learning materials, interpersonal relationships that can be matched with student interests, abilities, and learning styles to enhance the achievement of desired learning objectives. Teachers, counselors, and parents aid students in identifying learning goals related to student interests and needs and in selecting learning activities which best assist them in meeting their goals.

THE COMPREHENSIVE ADAPTIVE AND RESPONSIVE EDUCATIONAL SYSTEM (CARE

BY DAVID HELMS

The Comprehensive, Adaptive and Responsive Educational System (CARES) is an outgrowth of David Helms' concern, as director of the RBS Individualizing Learning Program, with the need to develop efficient means for managing the complexities of increasingly sophisticated instructional systems. However, the design is more than an instructional management system, it is a proposal for carrying on research and development in the school.

Dr. Helms takes the position that although the nature of future society is largely unknown and unknowable, it is reasonable to expect that American society will lose faith in, and withhold support from, educators who are unable to find solutions to persistent educational problems. In light of this prognosis, he argues that education must produce early evidence of a new capability to achieve society's educational intentions. Therefore, his proposal is concerned with the creation of a school that will offer each pupil an equal in-school opportunity to achieve formal learning commensurate with rational expectations of the schools' constituencies.

It needs to be emphasized that this is a proposal for the development of CARES as contrasted with proposals for the implementation of fully prescribed educational designs. Hence, the details of CARES will only become clear over time, and, even then, will be subject to change on the basis of new knowledge gained from successive experiences. The system is intended to be used by educators and learners, together, to plan and implement instructional experiences that will reliably lead learners to achievement of intended outcomes. Instruction will be structured on the basis of data about what is to be learned, data about the learner, and data about instructional processes. The system will not be tied to time-bound notions of curriculum or community expectations.

CARES will be comprehensive with respect to the range and diversity of learner needs and interests and with respect to the range and diversity of the aspirations of its other constituencies. Among these other constituencies will be: parents; school personnel; public authorities; neighborhood, ethnic, and racial interest groups; business interests; and knowledge producers.

CARES will also provide for the adaptation of education -- its organization, procedures and practices -- to accommodate individual pupil differences and to accommodate the diverse needs and interests that distinguish its many other constituencies.

Finally, CARES will be responsive to the action and expressions of all its constituencies, including pupils, by signalling the accuracy or mis-direction of their performances, by providing explanations and corrective suggestions for observed deviances, and by noting and reinforcing observed achievements.

However well-intended, participatory enterprise is prone to chaos and counter-productivity without the guidance of knowledge, logic and experience. Thus, the CARES proposal includes provision for its own empirical development. It is intended that CARES will be guided through successive approximation according to a Design, Implementation, Monitoring and Evaluation System (DIMES).

CHAPTER IV

MASTERING BASIC SKILLS

BY

JOHN A. CONNOLLY

INTRODUCTION

Any program designed for schools of the future must be based on some assumptions about the nature of society and the needs of schools in that society. These assumptions might represent a simple extension of present trends or they might anticipate dramatic changes in society. Further, such a program might be designed for widespread implementation in schools in the near future or for gradual acceptance over a longer time.

This design is based on a set of short-range predictions about the needs of schools in the next 10 years. It integrates into a single program a number of concepts, techniques, and curriculum structures that already have demonstrated their educational validity. Still needed, however, are program development, experimental field testing, and implementation by schools during the 1980's. In short the design emphasizes a practical approach to some predictable educational needs.

Engineering practical solutions to educational problems is a major challenge for the future. Many of the conceptual, technological, and programmatic resources needed to improve education are already available. Their widespread utilization has, however, been delayed by the diversity and complexity of operational school settings and, in many cases, by inadequate funding for a concentrated and comprehensive attack on a particular problem area such as basic skills.

The overall purpose of this paper is to outline a potential program for meeting the needs of schools in the future. It does not attempt to provide detailed specifications for a program design; nor does it contain a blueprint for implementation. All of the ideas presented here require further development and even further refinement in light of operational experience. The paper is solely intended to argue the need for a particular approach and indicate its possibilities.

The proposed program is presented in three major sections. The first section provides an admittedly personal and speculative conception of the needs of schools in the future. The next section outlines a model for a program designed to meet these needs. The last section discusses some major issues in implementing the program.

Conception of the Future

This design is based on some of the author's personal feelings about today's educational problems and some speculations about the directions these problems may take in the future. At the outset, then, it might be appropriate to state some views on the future of education which serve as the background to the proposed design.

The author tends to see the future of education in the next decade mainly as an extrapolation of present trends. In many important respects, education in the 1980's will closely resemble education in the 1970's. However, some fundamental changes may occur in selected areas as schools begin to respond to some of the more serious problems which are even now apparent - problems such as the failure to assure that all students achieve mastery of at least the basic skills.[1] In short, education in the future is viewed as a reflection of the present situation and a reaction to its major problems.

A fundamental issue that schools of the future will probably face is the already perceptible trend toward erosion of standards of educational excellence. Gagne (1), as part of his critique of the present design, stated the problem in these terms:

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[1] Our failure to assure student mastery of basic skills is by no means a new problem. However, there is increasing recognition of the magnitude of the problem and more pressure to do something about it.

Many of the elements to be seen in plans for future schools appear to have the aim of extending the boundaries of responsibility of educational systems, of making more and more varieties of education available to more and more kinds and numbers of students. These aims seem to be implicit in such conceptions as lifelong education, of collaborative solutions to social problems, of citizenship participation, of shared planning and decision-making, among others. It appears to me not unlikely that such trends may also have another effect, the outlines of which are already apparent. This trend might be called educational complanation, or levelling. Currently this trend can be seen in several developments: open admissions to colleges and universities, and the decline of grading systems, the politically-based attacks on test scores and testing, the blurring of distinctions between equality of opportunity and equality of performance.

These underlying trends, it seems to me, forecast the likelihood that schools will ultimately abandon the practice of certifying competence. We may possibly no longer be able to tell that graduating from the sixth grade has a different meaning in terms of human competence than graduating from the twelfth, or even from a college, except of course in terms of an individual's age and the general "maturity" that age implies. What has become of the pursuit of excellence?... What this may mean, it seems to me, is that the larger society will lose a whole set of criteria previously used for identifying and selecting people. The A's and B's will be gone, the certificates and diplomas will have lost their meaning, the test scores will have no credibility, and there is no longer any such thing as "correct" English. Thus, ways of predicting good or bad performance (before we are subjected to it) may no longer be possible. Of course, such a projection may be unduly pessimistic. I find it hard to persuade myself, however, that it is not a real possibility or that it does not have deplorable consequences.

If homogeneousness of this sort is to be foreseen, then surely the mastery of basic skills by everyone is of considerable social importance. If our schools cease to differentiate people, then it would be good if we could count on some fundamental degree of skill with language and other symbols in everyone. A program for the schools which proposes to accomplish these aims is therefore of more than ordinary significance for the future.

The design suggested here focuses on the basic educational goal to provide students with certain skills that are essential to success both in school and in later life. A growing concern for the provision of essential skills by all schools to all their students is envisioned in the following scenario of the future.

1. Educational Confrontation. Throughout the 1970's, decreasing school enrollments and increasing educational costs resulted in a series of confrontations between educators and taxpayers. Educators viewed decreasing enrollments as an opportunity to improve the effectiveness of education mainly by reducing class size. Taxpayers saw decreasing enrollments as an opportunity to reduce costs (or at least to maintain present cost levels) primarily by eliminating staff. Educators and taxpayers became increasingly concerned about both the cost and effectiveness of educational programs.

2. Educational Productivity. As schools faced strong pressures to reduce costs while maintaining or even enhancing effectiveness, they began to experiment with a number of methods to improve educational productivity such as work/study programs, increased class size, differentiated staffing, year-round schools, and technology-based education. While all of these techniques gained some acceptance in schools, none proved to be a general solution to the problem.

3. Technology-Based Education. Around 1980, a systematic approach to improving productivity began to play an important role in areas which traditionally have combined low effectiveness with high costs. Technology-based programs using systematic educational techniques to individualize instruction were widely used in special education, intensive education for the disadvantaged, and remedial education. As technology-based systems proved cost-effective in these areas, they began to spread to other parts of the curriculum.

4. Essential Skills. At this point the prime target for improving productivity through technology-based systems was the basic skills area. The main focus for public dissatisfaction with schools had become the question, "Why can't schools teach at least the basic skills in an effective manner?" While this goal was readily accepted, most educators preferred a

broader definition of the basics to include not only the traditional cognitive skills in reading, writing, and arithmetic but also some essential skills in affective and career areas.

5. Mastery Learning. Educators recognized that practically every student can master the basic skills when provided with a program that truly adjusts to individual differences in learning. Convincing evidence came from some experiments in mastery education and from the results of individualized programs like Individually Prescribed Instruction (IPI), Individually Guided Education (IGE), and Program for Learning in Accordance with Needs (PLAN). Individualization and personalization of the educational process became accepted goals in basic skill areas during the mid 1980's. Technology-based systems were found to be an effective and efficient means to this end.

The scenario suggests a widespread need for a technology-based program designed to lead all students to mastery of essential skills in a cost/effective manner. Such a program is described here.

PROGRAM DESIGN

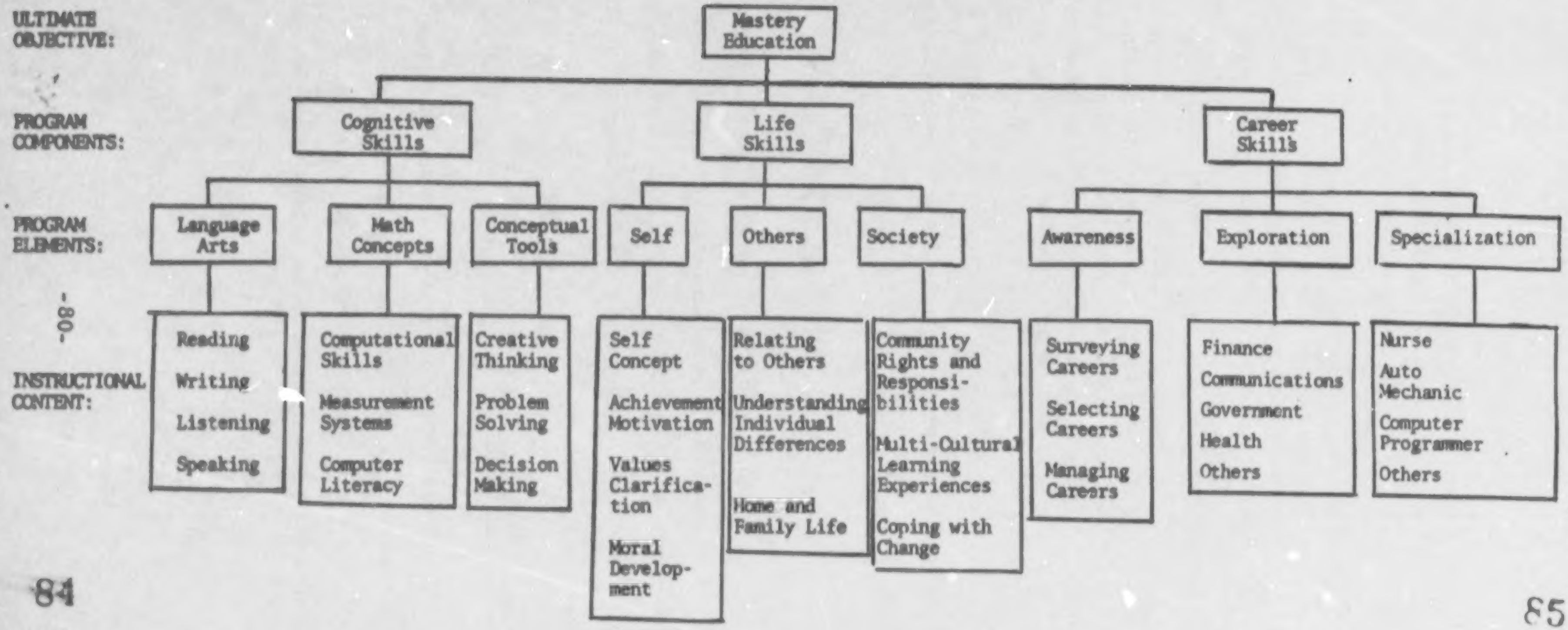
This section describes the nature of the proposed program from a number of points of view. A general overview of the program is presented first in terms of its curriculum structure. The program's specific objectives, instructional processes, organization, instructional materials, and management follow.

Curriculum Structure

The overall structure of the proposed program is shown in Chart #1. The program has as its ultimate objective the mastery of certain skills which are critical to success in school and in later life. It is designed to provide an opportunity for students to achieve at least minimum standards of performance

CHART #1

Curriculum Structure


ULTIMATE OBJECTIVE:
Mastery Education
PROGRAM COMPONENTS:
Cognitive Skills
Life Skills
Career Skills
PROGRAM ELEMENTS:
Language Arts
Math Concepts
Conceptual Tools
Self
Others
Society
Awareness
Exploration
Specialization
INSTRUCTIONAL CONTENT:
Reading
Writing
Listening
Speaking
Computational Skills
Measurement Systems
Computer Literacy
Creative Thinking
Problem Solving
Decision Making
Self Concept
Achievement Motivation
Values Clarification
Moral Development
Relating to Others
Understanding Individual Differences
Home and Family Life
Community Rights and Responsibilities
Multi-Cultural Learning Experiences
Coping with Change
Surveying Careers
Selecting Careers
Managing Careers
Finance
Communications
Government
Health
Others
Nurse
Auto Mechanic
Computer Programmer
Others

in each of these competency areas.[1]

The curriculum structure consists of three major components as shown in Chart #1. The Cognitive Skills component includes essential skills in traditional language arts and mathematics areas and some non-traditional areas such as creative thinking, problem-solving, and decision-making. The Life Skills component addresses affective skills that are critical to effective living in relating to the self, others, and society. The Career Skills component is designed to introduce the student to a range of career options and opportunities, allow him to explore alternative career choice in adult/work settings, and provide him with some in-depth experience in selected vocational areas.

The components, elements, and instructional content areas shown in the chart are not intended to represent a universal or comprehensive list of the most essential or critical skills in our society. Any one of them, with the possible exception of reading skills, might be questioned by some educators, parents, or students. Others might extend the list to include such additional content areas as psychomotor skills, esthetics, physical education, or drug education. Nevertheless, the proposed range of content represents a collection of a variety of skill areas which many would endorse as encompassing important aims of education for most students.

In fact, the competency areas suggested in the chart have long been a focus of interest for educational theorists, educators in field situations, and parents. Theorists from Aristotle (4) to Sizer (5) have stressed the

[1] The theoretical bases for a mastery education program have been developed by Carroll (2) and Bloom (3). In essence, they propose that a very high percentage of students (perhaps more than 90%) are capable of mastering the instructional content offered in schools today when provided with a program which truly adjusts to individual differences in learning. So, in theory at least, practically every student should be able to attain minimum standards of intellectual achievement in basic skill areas.

importance of learning to know (cognitive skills), learning to be (life skills) and learning to do (career skills). Individual schools have already implemented parts of the program in some of the specified content areas. Surveys of attitudes toward education (6) indicate that parents are becoming more receptive to the notion that quality education must go beyond the three R's to cover some basic skills in affective and career areas as well.

Nevertheless, a basic skills program of this scope has not yet been developed or implemented on a large scale. This is a result of many serious developmental and operational problems, including among others: defining the competency levels for the proposed content areas; reaching agreement between educators and parents about the basic objectives of education; integrating the instructional process across grade levels; assuring a high level of student success in meeting minimum performance standards; individualizing the instructional process without substantially increasing costs; managing a program of the proposed size and scope; and retraining staff for new roles. These issues are addressed in the following sections.

Objectives

The design calls for mastery objectives representing minimum performance standards in each competency area. The school would hold itself accountable for assuring that students have every opportunity to meet these criterion-referenced standards, and would give each child all the time and individual help he or she needed to achieve mastery. The process of determining the appropriate standards of performance would involve input from program developers, administrators, teachers, parents and students.

The program developer assumes responsibility for defining in each skill area a number of alternative levels from which a school's or district's performance standard would be selected according to local needs, conditions, and attitudes. Examples of alternative performance levels in some competency areas are given in Chart #2.

The selection of a particular level of performance from a number of alternative possibilities is a critical step in the process of defining objectives. Broad-based community involvement is important since these goals will structure a significant part of the education of each student. A survey of national experts on the one hand and of parents and students in the local school situation on the other might be used to assess preferences for particular content areas and levels of performance. The final decisions about which goals to strive for would be left in the hands of the local educators.[1] Whatever levels may be set, it is important to recognize that these performance standards are minimum levels for all students. Most students will reach much higher levels of achievement.

Instructional Process

Once the goals have been defined, the program developer would be responsible for building the instructional processes leading to mastery. The developer might use one or more of the existing models for structuring the learning process described by Briggs (7), Gagne (8) and Bloom (9).

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[1] Another way to select appropriate performance standards deserves comment. Instead of establishing the same performance standard for every student, a different minimum standard might be set for each student depending on his or her particular aptitudes and interests. This would require a more extensive educational program to provide instruction to a number of different levels of performance. While either goal-setting approach might be used, we will assume a common rather than a variable set of goals for each student to simplify further discussion of the nature of the program.

CHART #2

Sample Alternative Levels for Minimum Performance Objectives

Which of the following performance standards do you feel is a minimum standard for all students?

READING

All students should develop their reading skills to read with understanding:

1. material required for daily living, such as the telephone directory and road signs.
2. material on the level of a daily newspaper.
3. material on the level of a national news magazine.
4. material on the level of a specialized journal in their area of interest.
5. material on the level of logic or philosophy.

CAREER SPECIALIZATION

All students should develop career skills in specialized vocational areas to a level which allows them to:

1. identify and describe in detail at least one occupational area of major personal interest.
2. identify and describe the prerequisite skills for at least one job of particular interest to them.
3. demonstrate entry level skills in a particular occupational area.
4. locate and obtain employment in an occupational field.
5. locate and obtain employment in at least two occupational fields.

For example, the most elementary level in a structured and sequenced program of individualized instruction typically involves knowledge about facts and terminology relevant to the competency area. Reading skills might begin with knowledge of the alphabet, interpersonal skills might draw on knowledge of individual differences, and career awareness might rest on knowledge about available occupations.

The second instructional level often involves understanding of principles, concepts and relationships. Examples of this level are sight-sound relationships, principles of group dynamics, and correlations between educational levels and occupations.

The third level encompasses applications of this base of knowledge and understanding to develop skills such as reading a daily newspaper, appreciating another person's point of view, and identifying the essential differences among occupational fields. A number of existing instructional programs which follow this general pattern are described in a later section.

Some educators question a structured approach to instruction. They argue that it is extremely difficult to develop criterion-referenced performance standards, a hierarchy of objectives and instructional units, and frequent measures of progress in many content areas, especially affective areas. Some critics go even further to suggest that with the exception of some basic levels in cognitive skill, a structured approach is totally inappropriate for most content areas.

The position taken here is that it is possible to structure most content areas up to a certain point. Criterion-referenced performance standards can be defined even in affective areas. Topics which appear to represent prerequisite learnings in these areas can be identified and arranged in a loose hierarchy and creative ways can be found to measure student progress. However, a structured approach may be fully appropriate only for basic or fundamental levels of instruction. Our experience to date suggests that it becomes increasingly more difficult to structure the content, learning paths, and instructional processes at advanced levels of instruction.

Organization for Instruction

The setting and organization for the proposed instructional program is summarized in Chart #3. This chart adds another dimension to the description of the various components and elements in the curriculum structure.

Grade Level. All grade levels in elementary and secondary schools are represented in one component or another of the program. In general, the cognitive skills are introduced into the curriculum at the lower school level (grades 1-4), the life skills at the middle school level (grades 4-8), and the career skills at the upper school level (grades 9-12). The sequence for introducing content areas is an important aspect of the program.

All students entering the program at the first grade level begin work on an individualized instructional program in reading. Perhaps two hours a day are scheduled for this activity in a specially designed learning center to be described in a later section. Each child is placed at his/her level of competence in an instructional sequence that leads to a minimum performance objective. Individual students starting at different places in the sequence and moving at their own pace may take weeks, months, or even years to reach the mastery criterion in reading.

For those who do reach the criterion level before most of their classmates, three alternatives are available: a) to continue to develop their reading skills beyond the mastery point; b) to spend more time working in other subject matter fields in the larger school curriculum; or

CHART #3

SETTING AND ORGANIZATION

COMPONENT	ELEMENT	BEGINNING GRADE LEV.	SETTING	SAMPLE INSTRUCTIONAL MODELS	TECHNOLOGY BASE	INSTRUCTIONAL STAFF
COGNITIVE SKILLS	Language Arts	1	LEARNING CENTER	IPI IGE PLAN	CMI CAI	Center Supervisor/ Instructional Aides
	Mathematics Concepts	1	LEARNING CENTER	IPI IGE PLAN	CMI CAI	Center Supervisor/ Instructional Aides
	Conceptual Tools	3	LEARNING CENTER	Making Judgment	CMI CAI	Center Supervisor/ Instructional Aides
LIFE SKILLS	Self	5	GUIDANCE WORKSHOPS	ACT	Interactive Instructional Television	Counselors
	Others	7	GUIDANCE WORKSHOPS AND COMMUNITY AGENCIES	LOPE BRL Programs	Computer Simulations	Counselors
	Society	8	COMMUNITY AGENCIES	Multi-Cultural School Life Skills Prog.	CMI	Community Agency Staff
CAREER SKILLS	Awareness	9	CAREER GROUPS	School-Based Model ECES	Interactive Instructional Television	Vocational Directors
	Exploration	10	CAREER GROUPS AND WORK SITES	Experience-Based Model Clarkhuff Assoc.	Computer Simulations	Employer Staff
	Specialization	11	WORK SITES	Experience-Based Model Career Academies	CMI	Employer Staff

c) to begin work in other basic skill areas. At some defined point (e.g., second grade), another content area such as writing is introduced into the curriculum for all students. Students who have not yet completed the reading objective will work on both areas simultaneously. About two or three new skill areas are introduced into the curriculum each year.

The effect of individual pacing of this type is that students who learn quickly can move into advanced topics while those who need a considerable amount of time to learn will spend increasingly more time during the school day working on essential skills. This process provides maximum assurance that every student will master the essential skills. At a theoretical extreme, a few students in the twelfth grade, for example, might spend most of the day working on essential skills while other students are studying more advanced topics.

We are not suggesting mindless adherance to a system to the exclusion of the personal needs and problems of the individual student. It is senseless and even inhumane to force any number of students to spend increasing amounts of time reliving their past failures. In all cases, but especially for these exceptional students, the proposed system should provide guidance rather than direction to the instructional staff. It will help instructors to recognize a particular learning problem for a certain student, to identify new instructional approaches which have not been tried, to examine new techniques for motivating the student, to give the student another opportunity to master a particular objective at another stage in his or her development, etc. The instructional system in this situation serves to sensitize the instructional staff to the personal needs of the exceptional student.

The sequence for introducing content areás into the curriculum uses the knowledge and skills gained in earlier components to facilitate learning in later ones. The cognitive skills follow a pattern of initial emphasis on language concepts to serve as a foundation for later learning in the conceptual tool areas. These abilities in turn are helpful to the student as he/she develops self-awareness skills as a base for learning about others, and eventually society. All of those prior learnings enhance the development of career skills in a sequence from awareness to exploration and finally specialization.

Increasing student age levels are also reflected by the sequence shown in Chart #3. For example, it is only at the upper grade levels that most students are mature enough for specialized experiences in adult/work locations.

The sequence for introducing content areas into the curriculum may be one of the more controversial points in the proposed design. A critic might ask: What is the rationale for the cognitive, to affective, to career sequence? Why not introduce affective concepts first? Alternatively, why not have students work in all of these areas simultaneously? On what basis can you justify delaying the introduction of important affective concepts to the fourth grade or career concepts to the ninth grade?

Again, rigid adherence to the proposed structure is not intended. The rationale for emphasizing cognitive, affective, and career concepts at the lower, middle, and upper school levels has been made in the previous discussion. Nevertheless, variations in the sequence are certainly possible and may be desirable for some students or some schools.

It is also possible to integrate the content of one component with the content of another. For example, life skills and career concepts might be introduced as part of the cognitive learning process. Specifically, students might learn to read using materials with content that is carefully selected to incorporate achievement motivation skills, or career selection skills. Thus, the program would emphasize reading skills as a primary focus while secondarily introducing some other content area.

__Setting__. The setting refers to the context or environment in which the instructional activities take place. The instructional activities are mainly designed for settings other than the traditional classroom.

The main setting for cognitive skill instruction is a learning center. This center is envisioned as a large, open area which houses a variety of instructional materials and equipment. Most of the instruction is individualized and uses technology-based learning systems, self-learning materials, and peer and teacher tutoring. While a large part of the instruction is conducted in the center, some learning activities take the student to other places in the school and on trips outside the school building itself. Students spend varying amounts of time in the Center working at their own pace on one or more content areas.

Life skills instruction involves group workshop activities in the school under the supervision of trained counselors, and external study in the community under the direction of social service agencies The student first develops a concept of self by defining his personal needs, goals and attitudes in discussion with other students. He/she then begins to study interpersonal relations in a workshop setting, supplemented by learning experiences in community agencies such as a hospital or a Legal Aid office. Finally, he/she learns skills required to cope with society's pressures and demands from live situations such as a voter registration drive, labor union negotiations, or by organizing a food co-operative.

Career skills instruction focuses attention on the essential skills required to select and prepare for a rewarding and satisfying career. The students are organized into career groups to study the various occupational areas. The major instructional environment for career exploration and specialization are actual work sites in a wide variety of employer locations such as research laboratories, manufacturing plants, hotels, and retail stores.

Instructional Model. A number of models for curriculum and/or instructional processes in the various skill areas have been developed and tested in recent years. The instructional systems listed in the chart are only examples of some possibilities to be considered in a later effort to further specify the design. These systems are briefly described in this section to suggest the range of materials which are presently available.

Three already operational models are possibilities for the language arts and mathematics areas - Individually Prescribed Instruction (IPI), Individually Guided Education (IGE), and Program for Learning in Accordance with Needs (PLAN). Each involves a systematic process for organizing instructional activities leading to the development of a well-defined set of skills. In each case the process is highly individualized by means of structured and sequenced objectives, self-learning instructional materials, and a variety of criterion-referenced tests for diagnosis, placement and assessment of progress.

A potential model for the conceptual tools area is provided by a curriculum program called Making Judgments. It presents concepts, rules, and strategies that are prerequisite for independent thought, decision-making and problem-solving. The use of programmed lesson booklets with workbooks, games, and criterion-referenced tests allows for highly individualized instruction.

Achievement Competence Training (ACT) is a model for developing self-oriented life skills. It is a multimedia, partially programmed course, designed to teach children a behavioral strategy which will enable them to become effective in setting and achieving their own goals.

Life skills oriented toward others are covered in two other curriculum models. The Language of Personal Experience (LOPE) is designed to encourage students to systematically explore relationships with others and to develop functional, testable, and open-ended interpersonal skills. Behavioral Research Laboratories (BRL) has developed a number of programs for improving interpersonal communications.

Skills for coping with societal pressures and problems are the focus of two additional models. The Multi-Cultural School is an alternative school program designed to provide learning experiences about the social, ethnic and cultural bases of our society. The Life Skills model uses films to present dramatic instances of personal problems for group discussion about ways to cope with pressures in society.

Developing career awareness is a major purpose of the School Based Model and the Educational and Career Exploration System (ECES). The former uses individualized curriculum materials in a school setting to orient students to a number of career clusters such as finance, health, and communications. The latter is a computer-based system which provides career information and teaches career-related decision-making skills.

A major focus of four different Experience-Based Models now under development in the Regional Educational Laboratories is exploration of a wide variety of career opportunities in employer settings. Clarkhuff Associates have developed yet another approach to career exploration.

Career specialization is another important focus of the four Experience-Based Models. The Career Academies are alternative school programs with specialized training in electronics, food service and other occupational areas. The Academies have been developed by various companies working in cooperation with schools in Philadelphia under the sponsorship of the Urban League.

These sample models provide a framework for organizing the instructional programs in different skill areas. The actual curriculum materials used in each model may or may not prove appropriate in this program. Curriculum issues are discussed in a later section of this paper.

Technology Base. The technology base for each program element is also listed in Chart #3. Technology is defined as a systematic set of educational processes which are often organized, managed, or delivered with the assistance of an electronic device such as a computer, television, etc. Technology is especially appropriate for an essential skills program for a variety of reasons.

First, as noted above, a structured and systematic process seems most appropriate for basic or fundamental skills as opposed to higher level skills. This has been clearly demonstrated in the cognitive skill areas and would seem to apply to life skills and career skills as well. Second, technological assistance is needed for management of a complex program involving large numbers of students, many different grade levels, highly individualized materials, a number of content areas, and diverse learning environments. Third, many of the proposed content areas would benefit from the use of hardware technology to enhance instructional effectiveness and reduce costs. Fourth, the dissemination of the program would be facilitated if structured materials and systematic procedures are incorporated in the model.

Computer Managed Instruction (CMI) and Computer Assisted Instruction (CAI) define the technology base for the cognitive skills area. The entire instructional process in the learning center would be managed with the aid of a computer terminal that performs such functions as recording student progress data, diagnosing learning problems, prescribing the next learning activity, preparing student reports, and evaluating learning outcomes. These data will provide input to the management decisions of the instructional staff. In addition, some instructional units will be taught in an interactive mode by computer. This "mixed-mode" use of CMI/CAI is especially appropriate for basic concepts which follow a highly structured and sequenced learning path.

Interactive instructional television, computer simulations, and CMI are the designated technology systems for the life skill area. Interactive television will provide the student with a vehicle for responding to questions raised in a television presentation and branching the instruction on the basis of the responses given. This technology would be used for self-learning about personal needs and objectives in order to establish a personal knowledge base for the guidance workshop discussions. Computer simulations would present the student with dramatized instances of interpersonal conflicts, sharing experiences, etc., to serve as a basis for group discussions and training in community agencies. Computer management of societal learning experiences would take the form of scheduling students for appropriate agency experiences, assigning students to compatible learning groups, and evaluating the outcomes of external learning experiences.

The technology base for the career skills component is very similar to the life skills component. Interactive television, computer simulations and CMI in this case are focused on the development of essential career skills in employer environments. One function of these technology systems is to portray as closely as possible the reality of work situations.

The emphasis on technology-based systems may leave an impression of a mechanized and sterile learning environment. On the contrary, a major purpose for the use of technology in the proposed program is to allow more time for direct individual help to students. An instructional advisor would be assigned to each student with primary responsibility for assuring the basic skill development of the individual child. Regular meetings between student and his/her advisor would be scheduled to provide for continuous monitoring of learning progress and adjustments in the learning program. Furthermore, the student's daily learning activities in the Center would be enlivened by frequent personal contact in tutorial interaction, student group discussions, and teacher-led presentations.

Instructional Staff. The role of the instructional staff in this program is very different from that of the traditional classroom teacher. The fundamental distinction is that they serve primarily as facilitators or managers of learning, not as lecturers to groups of students.

The cognitive skills component requires a supervisor and one or two instructional aides for each center. The supervisor is responsible for organizing the instructional process, providing decision rules for computer management, and directing the individual learning paths of the students. The instructional aides are primarily responsible for individual tutoring of children and for center logistics. Most of the instruction itself is performed by the computer or by using self-instructional materials. All of the clerical work is performed with the help of computer systems.

The instructional staff in the life skills area includes counselors and employees from community agencies. The counselors in this program assume an active role in the instruction of students. Their responsibilities include providing individual help to students in understanding themselves and others, directing group workshop activites, and monitoring field experiences in community agencies. The community agency staff attempt to communicate some basic concepts about society as a direct outgrowth of student participation in their work situations.

A career director is responsible for the career skills area. The director also plays an active role in the instructional process by directing career awareness instructional programs and organizing career exploration for students in field settings. The staff of cooperating businesses and industries serve as instructional staff by helping the students to select appropriate career paths, teaching entry level skills, and supervising career specialization internships.

Instructional Materials

Some of the curriculum materials needed to implement the proposed program are already available in the instructional models previously described. Additional materials can be adapted from other existing programs once the objectives are defined sufficiently to guide the selection process. Still other materials may require original development.

The sample models discussed in a previous section focus on selected segments of a massive curriculum structure. Any effort to implement the design would require thousands of hours of instruction in a wide variety of content areas across the full range of grade levels. Even so, the quantity and quality of recently developed instructional materials is truly impressive. For example, the catalog of materials developed by the Educational Laboratories and Research and Development Centers (10) would provide a good starting point in the search for materials. It is not inconceivable that the proposed design could be implemented largely by using existing methods and materials.

The major task, at least initially, is that of selecting existing materials to identify those which best fit within the overall system design. This involves a review of existing curricular programs to isolate materials which match the objectives, content, and grade levels for each program element. Choosing appropriate packages (or segments) from the range of alternatives requires the application of various selection criteria including: the extent of the individualization provided by the material, ease of adaptation, development and operational costs, and evaluation of effectiveness.

The adaptation process is mostly a matter of structuring and sequencing the various learning units into a path or set of paths leading to mastery of the relevant objective. Materials to be used in the program require, at a minimum, a set of enabling objectives arranged in hierarchial order, specified learning activities for each objective, and progress tests to measure performance in each instructional unit. Desirable features of an instructional program would include: techniques for identifying and responding to different learning styles; alternative instructional units employing different approaches or presentation media; placement tests to enter the student at the proper point in the learning sequence, and pre-tests for each unit.

Original curriculum development would be used as a last resort to fill gaps in the system which would not be covered with existing materials. A completely new instructional sequence might be required for a few objectives, while for others, new curriculum units would be necessary only for certain steps in the instructional sequence.

All of the selected or newly-written materials would be converted to the applicable technology. The conversion process is more or less difficult depending on the technology involved. For example, converting materials to CAI or interactive television may be a demanding job requiring the addition of visuals, graphics, sound, and interactive branching. Conversion to CMI, however, is relatively simple since it requires the development of a system for managing the use of the materials rather than adjustments in the materials themselves.

Management and Administration

The management and administrative functions involved in a program of this size and scope include: setting priorities, establishing the range of program flexibility, determining goals and objectives and identifying needs.

A computerized system might provide assistance with many of these functions as well as direct help in scheduling, inventory control, staff supervision, coordination among program elements, articulation with the overall school program, grade and attendance reporting, and evaluation of program effectiveness.

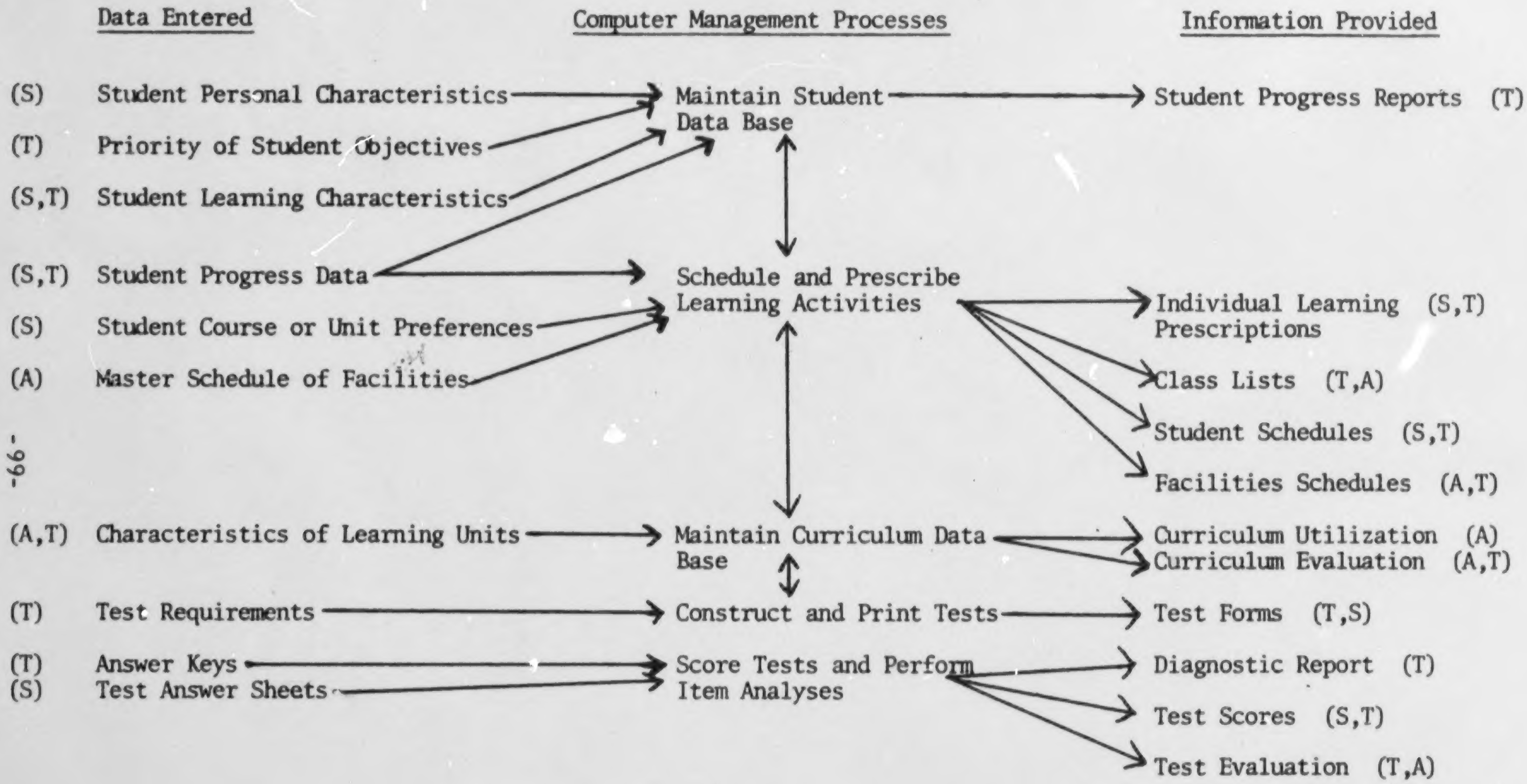
The systematic procedures used by the various program elements would provide the basic input into a school management system. Data collected on each student's performance and progress in each program element would be entered into a central student history file on an ongoing basis. The output from this file would include assignments of the next learning objective for each student, information for teachers concerning individual students' learning characteristics, summary reports for administrative use, evaluations of program effectiveness, material inventory data, forecasts of future student needs, and so forth.

The overall CMI system would manage the student's transition from one program element to another, help coordinate his essential skills program with other learning activities in the school, and provide much of the information needed for administrative decision-making. Chart #4 shows in more detail the computer management processes which might be used in relation to various kinds of input and output data.

A new administrative sub-structure in the school would use the information from the computer system to direct activities in this program. For example, an assistant principal might provide overall supervision of the program. Coordinators would be appointed to administer each of the three program components, and supervisors would direct each of the program elements. The roles and responsibilities of these staff positions would be clearly defined in an operating manual prepared by the program developer.

CHART #4

COMPUTERIZED MANAGEMENT SYSTEM


Data Entered
Computer Management Processes
Information Provided
(S) Student Personal Characteristics
(T) Priority of Student Objectives
(S,T) Student Learning Characteristics
(S,T) Student Progress Data
(S) Student Course or Unit Preferences
(A) Master Schedule of Facilities
(A,T) Characteristics of Learning Units
(T) Test Requirements
(T) Answer Keys
(S) Test Answer Sheets
Maintain Student Data Base
Schedule and Prescribe Learning Activities
Maintain Curriculum Data Base
Construct and Print Tests
Score Tests and Perform Item Analyses
Student Progress Reports (T)
Individual Learning Prescriptions (S,T)
Class Lists (T,A)
Student Schedules (S,T)
Facilities Schedules (A,T)
Curriculum Utilization (A)
Curriculum Evaluation (A,T)
Test Forms (T,S)
Diagnostic Report (T)
Test Scores (S,T)
Test Evaluation (T,A)

S = Student data source or information report
T = Teacher data source or information report
A = Administrator data source or information report

COST EFFECTIVENESS ISSUE

Any innovative program designed for widespread use in schools must pay close attention to cost-effectiveness. To oversimplify a complex issue, this is because an innovative program that seeks broad acceptance in schools must be able to demonstrate improved student learning, reduced program costs, or both, when compared with conventional classroom instruction.

The effectiveness of an educational program in improving student learning has consistently been the chief concern among program designers. This focus on student outcomes reflects a widely-held belief in our society that the only legitimate concern of educators is improved student learning. In program design, cost, teacher attitudes, and other factors are secondary considerations if they are dealt with at all.

This emphasis on student achievement is reflected in literally thousands of educational research and evaluation studies. A recently completed review of the full sweep of educational research findings by the RAND Corporation (11) reached a disturbing conclusion.

> Research has not identified a variant of the existing system that is consistently related to students' educational outcomes... We must emphasize that we are not suggesting that nothing makes a difference, or that nothing "works." Rather, we are saying that research has found nothing that consistently and unambiguously makes a difference in student outcomes.

While some researchers would dispute the RAND conclusion, it does seem to accurately represent the views of many educators in the field. In actual school settings, student outcomes are often not the primary concern when educators consider the implementation of innovations. Rather, the issues are program cost, teacher acceptance, potential management problems, parental reactions, etc. Perhaps many educators long ago reached the practical conclusion that it is impossible to prove that one program teaches all children everywhere better than another.

In the future, educators are likely to be even more concerned with the full range of cost-effectiveness issues. Widespread adoption is unlikely if a program results in higher costs, lower student achievement, serious management problems, strong parental objections, teacher resistance, or more student dissatisfaction. This poses an enormous challenge for the designer of educational programs.

All of the above considerations argue for a much broader perspective than usually is the case in a program's design, development and evaluation. The designer planning schools for the future must find not only better ways to teach students but also improved techniques for making programs inexpensive, easy to use, and appealing to teachers, parents, and students. Developers can no longer consistently sacrifice these more practical considerations for a questionable improvement in student achievement. Program evaluators should also give equal attention to the same range of issues.

As this discussion implies, the cost of implementing the program proposed here may be the single most important consideration. These overall costs can be subdivided into the cost of development (materials, procedures and supportive systems), the cost of start-up and operation of the program on a day-to-day basis.

While expenditures for development may seem high because the design calls for a significant amount of instructional materials, most of these materials already exist in some form or another. The major task is to adapt existing materials to the system design. Any attempt to estimate exact cost for materials development would require much more detailed design specifications.

An additional developmental cost factor is the conversion of materials to technology-based delivery systems. Past experience indicates that the conversion of materials to CAI, CMI, or other hardware systems is a time-consuming and expensive undertaking. This fact may prove to be a weak point in the design. It may not be feasible, from a cost standpoint, to convert some materials to a hardware delivery system. In these cases, manual procedures, self-instructional techniques, or teacher-led presentations can be used without violating the basic integrity of the design.

Start-up and operational costs are the primary concerns of educators in the field. Evaluating operational costs requires a comparison of the costs of this program with those of existing programs. Unfortunately, start-up and operational costs for a new program are even more difficult to estimate than developmental costs. Temkin, Connolly, et. al. (12) have developed a cost comparison module to compare the costs of an experimental educational program with a traditional program. These techniques, however, assume an experimental version of the program has been developed and implemented. Thus, while the question of operational costs is a critical issue, it cannot be resolved at this point in any realistic fashion. Further study of this question is a major priority in the plan of action for implementing the design.

Assessing the effectiveness of the proposed design requires a continuing program of research and evaluation. The research focus for the program would treat time to learn as a central variable. The basic thesis in Carroll's (13) model of school learning is that time is a critical variable in learning and that students differ in the amount of time they need to learn a given instructional unit to a predetermined criterion. Bloom (14) points to the many attractive features in the use of time as a major educational research variable:

> Time can be measured with as much precision as the researcher desires. The measures of time have many properties that are almost impossible to secure in our conventional measures of academic achievement: equality of units, an absolute zero, and clear and unambiguous comparisons of individuals. Furthermore, time can be put into economic and resource costs for the individual learner, for groups of learners, and for the schools and communities...It is also possible to use time as an index to determine the effectiveness of the methods of teaching and the quality of the instructional material.

A prime objective of this program would be to assure that a maximum number of students master each of the essential skills in a minimum amount of time. This focus raises a number of cost-effectiveness questions. What is the average length of time required to reach mastery of each objective? How can we improve the efficiency of the program by reducing the average time to learn? What units in the curricula require the longest time to complete? Why? What is the average cost per hour of instruction in the program?

Questions about the individual progress of each child are even more fundamental than broad cost-effectiveness concerns. Why is a particular child experiencing major difficulty in mastering a certain objective? Does that child need more time to learn, more help, or better motivation? What indicators might help us answer this question?

Other important R & D issues go beyond the time to learn concept. What are the attitudes of the administrators, teachers, parents, and students toward the program? Can we expand the basic structure of the program to encompass life-long learning with the addition of early childhood and adult education components?

The program could also serve as a vehicle for more basic research studies. Do children learn better when taught in ways that conform to their individual learning styles (i.e., is there significant aptitude-treatment interaction)? To what extent does time to learn vary with the content of instruction? Do the characteristics of optimal instruction vary widely from one learner to another? What does it cost to use teaching procedures and instructional resources which are optimal for each learner?

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CHAPTER V

EDUCATION FOR ADAPTABILITY IN LIFE ROLES

BY

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INTRODUCTION

What should education for the future be like? Clearly, our answer must take account of continual societal transformations involving extremely rapid change, ever-increasing complexity, uncertainty and unpredictability, and mounting social problems that threaten the very existence of our democratic way of life. The position taken in this paper is that education should focus on preparing each individual with adaptability to change through competency in solving problems encountered in major life roles. The roles requiring attention are those of learner, worker, citizen, community member, family member, and private person.

Instruction should focus on fostering both individuality and social participation, both classical purposes of a liberal education. In this regard, it is significant that the most distinctive, if not the most dramatic, advances made during the middle half of the twentieth century have been in human technologies based in the psychological and social sciences, rather than in physical technologies based in the natural sciences. These human technologies include psychological tests, individual and group psychotherapy, group-process techniques, methods of increasing the effectiveness of organizations, and methods of resolving group conflict. A crucial task for education is to adapt these technologies to instruction so that they promote in the individual student self-actualization and effective, responsible social involvement. Furthermore, this must be achieved in a world of physical technology and communication that is increasingly becoming dominated by the computer. Harnessing the computer in the service of the individual and of society will be as important as combating the forces that lead to individual alienation and social disorganization.

The following design for an educational system confronts these challenges by calling for an enlarged set of learning goals focused on teaching individual problem-solving competencies organized around critical life roles.

Psychological and social education are stressed alongside education for work, citizenship, and leisure.

A central feature of the design is its integration of home, community, school, and work environments so that the individual's education bears on all areas of living and takes place more outside school than in. This feature places the educational system in a social context where community members, parents, employers, and educators join the student in an active partnership. The total education of the student becomes the objective. Also, by opening the school to the community, and the community to the school, the educational system can serve the continuing, life-long learning needs of all members of its community.

The proposed educational design would be implemented through curriculum, instruction, and organizational arrangements that employ a selection from the wealth of innovations developed and tested during this past quarter-century. Its novelty is in the way these elements are built into the over-all design.

GENERAL PROPOSITIONS BASIC TO THE DESIGN

1. Focus Instruction on Preparing the Student for Major Life Roles

The educational system is designed to prepare every student to perform the major life roles within a changing society. Its focus is on learning those things that the individual actually uses in various life roles -- as learner, worker, citizen, family member, community member, and private person.

a. The basic skills are a priority since they are essential for acquiring, processing, and communicating knowledge.

b. Competencies in problem-solving involving choosing, planning, performing, and valuing in each life role are a prime emphasis in the education of every individual.

c. A major stress is placed on the psychological and social education of each student since these are of critical importance for effectiveness in life roles and for a sense of personal adequacy and well-being.

2. Provide an Inclusive Educational System

An educational system should not be viewed only in terms of today's school system, i.e., a network of buildings and grounds, a staff bureaucracy, a prescribed curriculum, grade-level student populations, fixed class groups, and set schedules. Rather, an educational system should be viewed as a set of procedures and instrumentalities for linking students with learning goals through utilization of various learning resources. This generic concept of an educational system frees us to break from traditional schooling and to employ a variety of means to stimulate and guide learning.

a. The proposed educational system offers a comprehensive set of learning resources, with all types and levels of learning goals linked with appropriate means of achieving them through a computerized data bank.

b. The proposed educational system integrates learning goals and resources for an entire life span, from infancy and early childhood to elementary, secondary, higher, and continuing education.

c. The proposed educational system provides for inter-generational learning experiences.

d. The proposed educational system integrates the various agencies involved in an individual's education -- communication media, family, community agencies, business, government, as well as various types of schools.

3. Treat the Student as Client of the Educational System

While ostensibly schools are designed to serve students' educational needs, more often they treat students as wards rather than as clients. Today's schools are mainly bureaucracy-centered, teacher-centered, and taxpayer-centered; they are not student-centered.

a. Students, as clients, share in decision-making about the design of their educational system.

b. All instruction is conducted as educational guidance of individual students and all learning tasks are undertaken as contracts.

c. Instruction, including group learning experiences, is individualized and directed toward fostering the individuality of each student.

d. Instruction stresses student self-direction in the choice of learning tasks and in the choice of means for attaining them.

e. Student mastery of learning tasks is a criterion accepted by both student and instructor.

4. Limit the Custodial Function of the Educational System

The requirement that, by law, a student between the ages of 5 or 6 and 16 must attend school 180 days per year makes the school a custodial institution that lessens individual freedom and hampers learning for a high proportion of students. This custodial function should be held to a minimum and, with respect to the individual student, limited to what is required for physical safety, emotional security, and the individual student's learning needs.

a. The educational system is designed so that the custodial function is shared by the home, community agencies, and schools according to the needs and maturity of the students.

b. Students participate in determining whether custody is needed, and how custody requirements are to be met. Learning self-management competencies is a central part of growing up and learning such competencies requires freedom to determine one's location, use of time, and conduct.

c. Central to educational guidance is helping the student determine custodial requirements, providing for them, and helping the student manage freedom from custodial restrictions.

5. Offer Every Student Options in the What, When, Where and How of Learning

Each student differs from every other in needs to learn and in manner of learning. Effective learning throughout life requires strong motivation and the use of learning resources suited to the individual. Requiring a student to undertake a learning task where interest is lacking or where the approaches to the task are inappropriate virtually guarantees ineffective learning. The options provided the student should take this fully into account.

a. Reduce the required curriculum to the minimum that is essential in the education of all individuals. The educational system specifies the minimum learning outcomes requisite for performing each of the major life roles. Beyond the basic skills in language and number, the required learnings focus on the general problem-solving competencies needed in performing work, citizenship, social, and personal roles, with wide latitude for individual choice of learning tasks with respect to each role.

b. With respect to any learning task, numerous options are available to the student as to learning setting, learning materials and equipment, and timing.

c. A key function of the educational guidance offered the individual student is to work out, on a contract basis, how the student will employ the options made available by the educational system.

6. Provide the Student with Educational Opportunities on a 12-Month Basis

In every individual, education is an uninterrupted life-long process that continues through study, work, and numerous other types of activities. The educational system should not take vacations merely because individual educators and students do. The concept of a 12-month educational system, active every day of the year and into the evening hours (as well as during the early morning hours), is entirely viable with the resources currently available. The problem is simply a matter of breaking from the traditional school schedule that has more to do with a now-extinct farm economy than with existing needs and resources.

a. A computer-monitered system of educational resources never sleeps or goes on vacation. It is available to any student of any age at any time.

b. Planned educational opportunities are made available to the student during vacation periods in the form of study, work, or recreation. Presently, the inner-city student swelters during the summer months with no opportunities for either meaningful or enjoyable activities. A 12-month educational system remedies this situation in two ways: by providing valid learning experiences during vacation periods through study and work experiences and through recreational camps that take students out of the ghetto during vacation periods.

c. An obvious value of the 12-month use of educational resources is that school plants would not lie idle over a third of the days each year. This is more than a matter of economy; it also increases the availability of resources to students.

7. Make Adult Education a Major Function of the Public Education System

Most individuals, when they terminate their basic schooling, whether at the secondary or college level, engage in few intentional and systematic learning activities during the remainder of their lifetime. Usually, only job requirements can induce adults to resume formal learning. In consequence, most people after leaving school fall farther and farther behind the advancing front of knowledge and in understanding and coping with a rapidly changing world. The need for continuing education is especially strong for the large number of individuals whose education through high school was deficient in basic skills, humanities, and citizenship.

a. The educational system provides all adult members of the community access to systematic educational guidance in planning programs of continuing education that make effective use of the learning resources available in school, home, and community settings, as well as in local colleges and universities.

b. Provisions are made for adults of any age to join elementary or secondary students in their coursework.

c. Opening school facilities during evenings and weekends, and on a 12-month basis, greatly increases their availability to employed adults and to mothers with young children. Another solution for mothers is the building of day care centers in the schools for infants and toddlers.

8. Make Full Use of Community Members and Students as Instructional Resources

In today's schools, very little use is made of either community members or students for instructional purposes. Yet, a high proportion of what the individual learns is learned at home, in the community, and from fellow students. Integrating the learning that is acquired in these ways with instruction in schools is an essential part of setting up an adequate educational system.

a. Teaching others is a part of everyone's performance of each life role if what we mean by teaching is telling, showing, explaining, helping, and the like. Older students teaching younger ones is a part of the educational system and a major aspect of the teaching-learning process. And it is a proper emphasis in the educational process since both parties to the transaction benefit.

b. Experience during recent years has amply demonstrated that many community members can contribute to the instructional process, either by providing instruction to students in community settings or by joining the school staff in the role of teacher aide, career advisor, or specialist instructor in areas such as art, music, dramatics, dance, ham radio, or photography. These functions can be performed with students of all ages.

9. Make Full Use of Technology in Managing and Conducting Instruction

Recent advances in technology can greatly extend and enrich the educational opportunities of every student; they can also offer economy to the educational system. Rebuilding the educational system to take advantage of technological resources promises to transform the process of education in ways that benefit all students from earliest childhood through the adult years.

a. The potential of both instructional and commercial television has been amply demonstrated. The need is to integrate this medium into the educational system.

b. Numerous other technologies, particularly tapes, filmstrips, films, and microfiche, have been shown to add valuable options to the ways in which students learn. These too should be built into an inclusive educational system.

c. The computer has the capacity to organize and make available immediate information on the full range of educational resources. These resources should be catalogued, placed in computer data banks, and access to the data given to anyone in an instructional or student capacity.

d. Computer-assisted instruction has immense promise of facilitating learning, particularly of the basic skills.

10. Provide for Accountability in the Educational System

An adequate educational system offers effective and efficient means for achieving any learning goals identified by the system. Mandated as well as elective learning tasks should be monitored so that each student achieves mastery, with the system held accountable for failures either in effectiveness or efficiency.

a. Accountability requires that learning outcomes be operationalized and that suitable measures for their attainment be available.

b. To enforce educational system accountability, some sort of voucher system is needed whereby students and/or parents can determine how the student makes use of alternative educational resources.

c. Determining the basic learnings all students will be required to achieve should remain the responsibility of the state government with full citizen participation in this process. Additional required learnings voted by the community should be provided for, as long as they do not conflict with state requirements.

d. State-controlled competency testing should be used as a basis for certifying students' learning and for determining payment of state monies to local educational agencies. Normally, the educational system itself would test for competency while the state agencies would be responsible for monitoring the process.

THE EDUCATIONAL SYSTEM'S CURRICULUM

School systems are being pressed to move toward a full set of learning experiences covering all aspects of the individual's education. Societal pressures are calling for an enlarged set of learning goals that includes personal and social education (sometimes called affective education, humanized education, convergent education, or inter-cultural education), career education, and education for adults in the community. Another trend that is enlarging the conception of a school system is the move to bring school and community into a more intimate union, to create a school-in-community, not a school-for-community.

The curriculum for an educational system is defined here to include the full set of learning goals toward which instruction is offered; learning materials of any sort that are directed toward the learning goals; and learning settings that provide experiences intended to accomplish any of the system's goals.

LEARNING GOALS FOR THE 1980'S

The learning goals listed below reflect a conception of education that prepares each student to perform major life roles. The goals represent a program of quality education that is appropriate for anyone at any age. All of these goals obviously are relevant for education in the 1970's; doubtless they will be equally relevant, if not more so, for education in the 1980's.

1. Competencies in the 3R's. This goal includes the tool skills of communication and the uses of numbers.

2. Competencies in problem-solving thinking and action. All students should gain command of general problem-solving processes as they apply to work, citizenship, social living, recreation, creativity, and personal development and expression.

3. Competencies in self-managed learning. This goal encompasses the motives, habits, and skills called for in acquiring new knowledge or skills and in applying them at school, outside school, and throughout life.

It has particular importance in view of the very rapid pace of change in all aspects of society (requiring life-long learning), and in view of the developments in educational technology (programmed learning materials, computer-aided instruction, etc.) that facilitate learning on an individual basis.

4. Competencies in choosing and undertaking work in an occupation. This involves study of various occupations, work experience in selected occupations, and preparation to enter one or more chosen occupation. For those who have employment experience, it may mean upgrading oneself in an occupation or choosing another occupation and preparing for it.

5. Competencies and interests in citizenship participation. This calls for knowledge of the organization and procedures of representative government, competencies in participating in the electoral process, competencies in analyzing social and political issues, and competencies in propoganda analysis. The critical importance of this goal is evident in the many urgent problems of our society: inflation, the depletion of natural resources, pollution, world overpopulation, famine, crime, and corruption in government.

6. Competencies in interpersonal relations and performing group roles. This goal has relevance to different life roles insofar as they are performed in social contexts.

7. Competencies in analyzing and helping resolve community problems. This goal has relevance to coping with a variety of urgent community problems such as housing, education, pollution, crime, group conflict, and taxation.

8. Knowledge of world societies as related to American foreign relations. This goal recognizes that everyone in our society has a personal stake in what happens in other countries and that our country's interests are intimately related to the interests of citizens of other countries.

9. Competencies in self-study and feelings of personal adequacy and worth. This goal is important for personal fulfillment and for effective learning insofar as self attitudes motivate and guide learning.

10. Competencies and interests in leisure-time pursuits. A major part of a person's time is spent outside of formal study or work in "rest and recreation," or in developing and expressing avocational interests. Making enjoyable and productive uses of leisure time thus is a vital educational aim, contributing to both personal enjoyment and societal well-being.

NEW CURRICULA NEEDED IN EDUCATION FOR THE 1980'S

The list of learning goals presented here creates demands for many changes in curricula over those employed in most school systems today. Many of the new curriculum materials for elementary and secondary schools developed in the past two decades, notably in science, mathematics, and social studies, place an emphasis on teaching problem-solving or inquiry competencies (Goal 2). Beyond minimum instruction in study skills at the elementary level, the schools give very little attention to teaching students competencies in self-managed learning (Goal 3). Curriculum units such as the Achievement Competence Training (ACT) package developed by Research for Better Schools represent the sort of new instructional materials required to teach students self-management skills.

Curriculum modifications are needed to attain each of Goals 4-10 on the list above. The new emphasis that must be built into curricula serving these goals is that of offering learning experiences that will prepare all students to perform the life roles to which these goals are relevant (career education, citizenship education, education in interpersonal and intergroup relations, and education for leisure). Another emphasis should be helping students develop into emotionally sound, personally integrated, and happy individuals. Recent emphases in curriculum development promise to meet many of these needs through learning materials and associated instructional procedures in career education, citizenship education, interpersonal relations, values education, and psychological education concerned with such aims as self-knowledge and positive self-concept.

Also, extending the age range of students receiving instruction to include infancy and early childhood as well as adult years requires major curriculum developments.

LEARNING SETTINGS AS CURRICULUM RESOURCES

Often the learning setting, rather than prepared curriculum materials, provides the basis for achieving learning goals. This is the case when the "climate" of a school fosters such outcomes as positive self-concept, empathy with persons from different cultural groups, and competencies in interpersonal relations through social organization and by the manner in which staff members treat students. Other illustrations of learning settings as substitutes for formal curricula are apprenticeships in career education and work assignments in community agencies.

Schools of the 1980's should make extensive use of learning settings to achieve those learning goals that can best be attained in this way rather than through formal curricular materials. For example, a great deal of mathematics can be learned better in a factory or business office, where it is used in solving real problems, rather than in course work that teaches rote arithmetic or the formal rules of algebra.

SELECTING SCHOOL CURRICULA

For each of the learning goals listed here, there is an array of materials and equipment available to foster students' mastery. By the 1980's, additional learning materials and equipment will become available. From these, any school system can make a selection that serves its student population and that covers its range of educational goals. Also, any individual or group engaging in purposeful learning on an independent basis can select from the available fund of learning materials according to the educational aims to be met.

An inclusive public school system serving the educational needs of its entire community must provide access to learning materials and equipment appropriate for preschool, elementary, secondary, and higher education students, as well as materials for adult members of the community participating in a continuing education program. The curriculum materials drawn on by a public school system should include those employed by any community agency contributing school-related educational programs such as career training provided by local businesses.

To accommodate individualized education, learning materials should be organized in sequenced or stand-alone learning units (modules, mini-courses) rather than in texts designed to cover entire courses. Also, every learning unit defined by a specific set of objectives should be represented by several alternative learning packages accommodating students' different preferences and "learning styles." Thus the same learning unit might be available in the form of reading material, programmed material in written form or in a computer program, an audiotape or videotape, or a guide to individual or group independent study. In addition, every learning unit should include instruments or procedures whereby instructors and students could assess the accomplishment of its learning objectives (through pretesting and posttesting).

So that instructors and students have a means for choosing and obtaining appropriate curriculum materials, the school or school system should employ a computerized information system containing data on the learning objectives of curriculum units and the alternative materials available for studying each unit. Obviously, not all curriculum materials available at a given time would be incorporated in the computer data bank. However, the bulk of such materials could be included, to be supplemented by information from other sources.

Despite the magnitude of the task of creating and maintaining such a service, a national computerized data bank on curriculum materials and equipment should be given serious consideration. What is called for is an information system that serves educational purposes similar to that of the Consumers Union for other types of products. Paralleling the current Educational Resources Information Center (ERIC), we would have an Educational Products Information Center (EPIC). One current education information service, Educational Products Information Exchange (EPIE), represents steps taken already in the proposed direction. The national data bank would in no sense constitute a national curriculum. It simply would be a resource to be drawn upon by schools, school systems, and individuals according to local or individual option.

ORGANIZATIONAL STRUCTURE FOR EDUCATION IN THE 1980'S

The organizational structure of today's public school system could not serve the requirements of education for the 1980's as outlined here. All ten of the general propositions basic to a new design for education have implications for organizational changes: providing an inclusive educational system, treating students as clients, preparing them for life roles, reducing custodial requirements, offering alternatives, having year-round schooling, including adult education, using community members and students as instructors, maximizing uses of technology, and making the educational system accountable. These modifications would change virtually every feature of today's public school bureaucracies as well as the organizational features of parochial and private schools.

It seems safe to predict that the great majority of the nation's students in the 1980's, just as today, will receive their formal schooling in public elementary and secondary schools, community colleges, and state-supported universities. Also, it seems most probable that public school systems will focus, as now, on conducting early-childhood, elementary, and secondary programs. A strong case can be made for including in the public school system the community college level and for close articulation of public-school programs with the programs of four-year colleges and the universities. In the discussion that follows, the assumption is made that public school systems covering pre-elementary, elementary, and secondary levels will remain the centers for organizing and conducting public education, but that their programs will be extended into the community, into adult education, and into closer relationship with the programs of private schools, community colleges, and institutions of higher education.

BASIC ORGANIZATIONAL PLAN

Today, school systems throughout the country assign nearly all of their students to neighborhood schools that serve certain grade levels and provide each student's total instructional program. Thus we have 6-3-3, 6-2-4, and

4-4-4 plans for setting up elementary, intermediate, and senior high schools. In large cities, a few special schools have been created to serve certain categories of students on a city-wide basis. Generally, however, the education offered students employs a standard curriculum covering basic and elective subjects that are taught on a standardized grade-level basis. Schools for the 1980's should break from this conventional pattern in several ways. The following proposal discusses some of these changes.

Schools as educational guidance centers. A distinction can be made between schools as centers for planning and managing instruction and schools as learning centers where instruction takes place. This is not to say that both administrative and instructional functions cannot occur within the same building. It merely says that they need not. What is proposed is that the term "school" be used to identify a center for guiding and coordinating instruction; instruction itself will take place in learning centers.

The function of a school, according to this proposal, is to provide "educational guidance" to its student population. This involves diagnosing each student's learning needs and learner characteristics in relation to the educational aims for which the school assumes responsibility, planning with the student a general program of studies, making needed arrangements for conducting the program, assisting the student with any problems encountered and assessing over-all progress as a basis for further planning.

An instructional function that should be a part of, or closely associated with, educational guidance is psychological education that focuses on self-knowledge, interests and values, and competencies in pursuing learning tasks either on an independent basis or in various social contexts. Thus a psychological education center would be a component of a school as that word is here defined.

The population of an educational guidance center generally would be composed of students of a limited age range since this favors setting up school staffs that have special interests and competencies in working with students of a restricted age group (early childhood, middle childhood, early adolescence, later adolescence, or adulthood).

The staff of an educational guidance center (or school) would need to possess competencies in assessing students' learning requirements in relation to the educational aims of the school, in diagnosing students' learning characteristics in relation to those aims, in working out programs of studies with individual students, in helping students carry their studies forward in different learning centers, and in assessing students' progress as a basis for further planning. In addition, if the educational guidance center served also as a psychological education center, the staff would need to have competencies in planning and conducting psychological education.

The number of students served by an educational guidance center could vary greatly, from a handful to hundreds. In public schools, the number would be determined by the size of the staff and the average proportion of a student's time spent in the center. Thus, if the staff of a center consisted of three full-time professionals representing different competencies and if students averaged one-half day per week at the center, the student population might be around 200. This would mean that a different group of about 20 students would attend the center each half-day for individual conferences and group sessions in psychological education. A good deal of the staff's time would be spent in consultation with staff members of other learning centers where parts of the instructional program were conducted in order to coordinate the students' work.

Learning centers. An educational system as conceived here would consist of one or more educational guidance centers and a number of learning centers where different components of instruction were conducted. The types of learning centers established would depend on the scope of the instructional program while the number of learning centers of each type would depend on the number of students there were to be served by the educational system. In this projection, the types of learning centers proposed are for a public school system that offers instruction in the required and elective areas of a conventional, comprehensive program. It must be stressed that the proposed learning centers may all be located within the same school building, they may be located in different school buildings, or they may be located in various community settings.

All students in public schools should receive instruction in four basic types of learning centers: psychological education centers (associated with educational guidance centers), skill learning centers, academic inquiry centers, and social learning centers. In addition, on a required or elective basis, students would attend special learning centers in the creative or performing arts. (This way of organizing instruction into learning centers has elements in common with those proposed by Herbert Thelen of the University of Chicago in his Education: The Human Quest. It also has similarities to the "learning stations" in open-classroom plans.)

Skill learning centers would be devoted essentially to instruction in the 3R's. A particular center could teach the full range of skills in these areas, or it could cover a restricted range. Students attending a skill center would come from different educational guidance centers and might be of any age. Students of quite different levels of advancement could be accommodated at the same time because instruction would be on an individualized basis, using mainly programmed learning units. The staff of a skill learning center would be composed of specialists in reading, the language arts, and mathematics. Paraprofessionals would perform routine tasks associated with instruction.

Academic inquiry centers would offer instruction in the humanities, physical and biological sciences, and the social sciences (history, political science, economics, and geography). Cultural anthropology, social psychology, and sociology would be taught mainly in the social learning centers. Instruction in the inquiry centers would focus on teaching students principles and methods of inquiry within each subject area rather than on teaching facts. Instruction would employ the project approach where students would conduct either individual or group projects. Teaching all students competencies in inquiry (problem-solving methods) would be a major emphasis in instruction. The staff of an academic inquiry center would be made up of specialists in the humanities, physical and biological sciences, and social sciences. The centers would make considerable use of community members, university professors, and others having special knowledge in the areas under study. Students attending a center would come from different educational guidance centers, could be of any age, and include adults from the community.

Social learning centers would focus on those learning goals that are critical for becoming an effective and responsible member of society. These include: competencies in establishing positive interpersonal relationships with those differing from oneself in sex, age, social class, race, or ethnic group membership; competencies in performing group roles; knowledge of the values, interests, and folkways of different cultural groups in our society; knowledge of community organization and functioning; competencies in analyzing community problems and in devising ways of solving them; and competencies and interests in citizenship participation. In focusing on these goals, the centers would mainly employ a group approach in which small groups of students undertake project activities. The curriculum of the centers would bring together principles and methods from social psychology, sociology, cultural anthropology, economics, and political science and stress their application to the process of becoming socialized to the structure and functioning of communities, to interpersonal and intergroup relations, and to the performance of citizen roles. The study of cultural differences would include study of the music, dances, art, traditions, and folkways of different cultural groups resident in the local community. To this end, students attending a social learning center would have to be from different racial, ethnic, and class groups, as well as represent different generations. The staff of the center would consist of specialists in social development, interpersonal and intergroup relations, and the study of community problems. A high degree of community involvement would be requisite for its success. Often, a social learning center would be housed in a community facility rather than in a conventional school building.

An educational system as a set of educational guidance and learning centers. This proposal makes the educational guidance center the basic organizational unit for an educational system since it is the coordination point for the instruction offered students in different learning centers. It is important to note that a learning center is not defined as a geographical location but as a set of instructional functions that could be performed in different physical settings.

An educational system serving a community (as is the case with public school systems, parochial school systems, and private schools) would, as now, be governed by a board of education and administered by a central staff. The role of building principal would remain but be changed to take account of the new kind of instructional organization. Also, leadership in setting up and conducting the educational guidance and learning centers probably would require a new role of educational coordinator.

EDUCATIONAL ALTERNATIVES

Educational alternatives call for adapting instruction to the learning needs, interests, "learning style," and preferences of the individual student. Most of the present concern about alternatives reflects the conviction that today's schools do a poor job of meeting students' educational needs, causing large numbers of students to tune out or drop out. Alternative programs in public schools, and alternative schools outside the public system, have been set up in many communities to deal with this problem.

One questionable development in the efforts made to provide alternatives is to offer the student (or student's parents) the choice of studying in the traditional (whole-class, teacher-dominated, standard curriculum) manner, or studying in an innovative program (nongraded, team teaching, individualized, open classroom, honors program, etc.). This type of option is defended on the basis of the assumption that, if a student or parent wants the traditional approach, it should be provided, even though the traditional approach may do violence to any reasonable criteria of valid education. Also, the option is defended to permit teachers to teach in the way they prefer. Thus, if a teacher wants to employ whole-class teaching that treats all students essentially alike and places the student in the role of passive recipient, this is accepted as one alternative. The proposal offered here would rule out this particular type of option and require that all instruction be adapted to individuals, stressing active learning with a high degree of student self-direction.

Five sorts of alternatives would be offered the student in the proposed system: (1) beyond the required basics, the student would be offered choices as to courses studied, and/or units to be studied within a course; (2) in studying any unit, the student would choose from two or more ways of studying it; (3) within a learning center, a student would have options with regard to the setting for learning, including studying at home on an independent basis or studying in an appropriate community setting; and (4) attending alternative schools or school systems would be permitted. The staff of the school system, the student, and the student's parents would participate in deciding how to make the best use of the options available.

With respect to alternative learning settings, one type of option that would be available to many students is that of studying part of the time in local colleges or universities. Thus an advanced high school student might take a university course in an area of special interest such as electronics. This sort of modificatio in the relationship between colleges and universities and public schools already has been made to serve the needs of a few highly-selected advanced high school students. Certainly in the case of state-supported colleges and universities, this would be expanded to provide special learning opportunities for a larger number of secondary students with different levels of advancement but whose interests would be met by taking part in appropriate university coursework or activities.

SCHOOL SYSTEM SCHEDULES AND STUDENT GROUPING

School systems as we know them employ an elaborate, rigid, and interlocking set of school schedules, teacher schedules, and student schedules wherein students are assigned to class groups and classrooms to study asssigned subjects with assigned teachers for set periods of time. The justification offered for this is that space, time, and teachers all are in short suppiy and that efficiency and economy require making as close to 100 percent use of these scarce resources as is possible.

The proposed educational design requires great flexibility in the use of instructional resources to meet the needs of individual students. While each student will need to be scheduled for the use of resources, scheduling will be on an individual rather than a group basis. Assignment to fixed class groups will be the exception, with student grouping changing constantly as the day-to-day or weekly learning requirements of individual students change.

Achieving the needed flexibility in scheduling will be facilitated by three provisions for extending resources: (1) school facilities and other instructional resources will be available to students on a 12-month basis, and during evenings and week-ends, thus modifying staff schedules to provide the required instruction outside of current school days and hours and supplementing the regular staff with instructional services from fellow students and community members; (2) a significant proportion of the school system's instructional program will be conducted in community settings, with community members acting in instructional capacities; (3) instruction will place emphasis on student self-direction in the conduct of learning tasks, greatly reducing the time demands students place on members of the school system's staff.

In terms of student self-direction, there are three ways to help students manage their own learning and each should receive emphasis. The first is through the use of programmed learning materials, including computer-aided instruction, where built-in cues are provided for conducting and assessing learning on an independent basis. The second is through student teamwork where students help one another with their learning tasks. The third, and the most fundamental, is for students to develop competencies in problem-solving that enable them to select, plan, and conduct learning activities on a fully independent basis. This last depends on schools placing a major emphasis on teaching students how to learn; that is, how to employ problem-solving skills in choosing and conducting learning tasks.

EDUCATIONAL SYSTEM GOVERNANCE AND ACCOUNTABILITY

Decisions concerning the design, conduct, and support of a school system should be shared by the parties involved: students, parents, teachers, school administrators, the school board, community members, community agencies and organizations participating in the program, and the state and local government Advisory panels representing these constituencies should periodically review the school system's educational aims, its curriculum, its learning resources, the organization and conduct of instruction, ways of certifying instructional outcomes, and the system's finances.

Holding the system accountable requires that effective instruments and procedures for assessing instructional practices and instructional outcomes be available and used regularly. Only in this way can a school system as a whole, or any of its components, be evaluated and improved.

The state government has the mandate to specify required learnings for the system that meet the general purposes it establishes. Holding the school system accountable for these required learnings calls for obtaining and evaluating evidence on learning outcomes, then for employing legal and financial means for enforcement. Since the proposed educational system calls for numerous changes in state requirements (with respect to such matters as required courses, years of schooling, school attendance, etc.), installing it would require changes in state regulations. Communities would need to use political processes to accomplish the needed changes at the state level. To prepare citizens for this political role, major programs of public education on choosing learning goals, on identifying valid curricular and instructional approaches, and on meeting individual differences in educational needs would be required. Also, public education on legislative processes would be necessary.

Local accountability would be accomplished by students, parents, and community members or organizations influencing decisions of the board of education and by parents or students making use of options (as by a voucher system) permitting them to turn to instruction offered outside the school system.

CONDUCT OF INSTRUCTION

INDIVIDUALIZING INSTRUCTION

The proposed educational system would offer individualized instruction on a regular basis to all students. The general definition of individualization that would be followed is this: Individualized instruction consists of planning and conducting with each student a program of studies and week-by-week learning activities that are specifically suited to the student's needs and characteristics as a learner. Six modes of individualizing instruction would be employed, each providing student-to-student variations in:

1. Subjects studies, or learning tasks within subjects
2. Learning materials and equipment used
3. Learning settings where study is conducted
4. Assignment to particular teachers
5. Instructional methods teachers use
6. Rate of advancement within a subject studied

Each student would have a coordinated set of instructional and learning experiences in the four types of learning centers (psychological learning center, skill learning center, academic inquiry center, and social learning center). The student's over-all instructional program would be planned and coordinated in the educational guidance center. What follows is a brief sketch of how learning through individualized instruction would be accomplished in the different centers by following a general plan developed in the educational guidance center.

EDUCATIONAL GUIDANCE CENTER

The functions of this center are to work out with each student a general plan of studies in the areas covered by the four learning centers, or for any study to be conducted outside those centers; then to continuously monitor the student's progress in the plan of studies and, when required, modify that plan in consultation with the student and the student's teachers in the learning centers.

Arriving at the student's general plan of studies would require answers to several questions:

-- What general learning outcomes (required and elective) should this student work toward?

-- Where does the student now stand with respect to each of these outcomes?

-- What priorities should be set with respect to working toward the outcomes?

-- How should the student's program be planned to take account of learning style and preferences?

-- What should be the student's weekly schedule of studies in the four learning centers (or elsewhere)?

Answers to these questions about the student's general study plan would be needed periodically, perhaps twice or three times each year. The necessary data to arrive at the answers would come from several sources. For all except new students, data about previous study plans would be available, preferably in a computer data bank. These data would consist of records on previous learning tasks and on the student's performance of these tasks. The student's entire course of study would be kept up to date in a data file in the educational guidance center through regular inputs to the computer data bank.

When students enter the school system for the first time, the staff of the educational guidance center would do a complete evaluation and diagnosis of the student's goals, progress, and learner characteristics and use these as a basis for planning a program of studies. In this process, the staffs of the several centers would assist in assessing the student's current level of attainment in their particular areas of instruction.

For planning student programs, it would be a great advantage to assign students to the same educational guidance center year after year. This would permit the center's staff to know the student intimately, thereby greatly strengthening and speeding the planning process. Assume that 200 students in the age range of 5-10 years were assigned to an educational guidance center. Aside from transfers due to families moving, only about one-sixth of the students in the center would be new in any given year.

In addition to planning the general program, the educational guidance center would regularly review the student's overall progress and help the student with any problems arising in his or her studies.

The fact that the staffs of the educational guidance center and the psychological education center would be one and the same means that instruction in the latter center could be conducted so as to tie in directly with planning and conduct of the remainder of the student's program of studies. Thus, in the psychological education center, major attention would be paid to the student's values, interests, competencies in self-direction, and personality characteristics as they relate to performing various learning tasks in other settings.

PSYCHOLOGICAL EDUCATION CENTER

The psychological education center would have the same student body and staff, and occupy the same space, as the educational guidance center. However, it would be a distinct entity in the sense of having different, though related, purposes. Assume that a different group of 20 students attends a psychological education center each half-day of the five day week. Part of the time some of the 20 would be in individual planning conferences with staff members for educational guidance. During the bulk of the time, however, the students would be engaged in the psychological education program, studying its curriculum on an individual or group basis.

SKILL LEARNING CENTER

Each student in a skill learning center would have an individual study plan for achieving competencies in reading, the language arts, and mathematics. The center would offer a curriculum consisting of learning units suited for individualized instruction. Most of the units would be self-instructional and would exist in alternative forms. Various learning media would be used in the center: programmed written materials, audiotapes and videotapes, filmstrips, manipulative materials, typewriters, electric calculators, and computer-aided instruction.

Instruction in the center would be offered at any level where the individual student was prepared to work. Provisions would be made for both independent study and pupil-team learning. Mastery learning would be monitored through pre and posttesting. The predominant mode of instruction would be tutorial assistance to individual students or student teams.

ACADEMIC INQUIRY CENTER

In this center, instruction would focus on planning and conducting individual projects employing the inquiry or problem-solving mode. This approach would reject the conventional requirement that every student cover the same subject matter in literature, science, or social studies. Instead, the goal would be for the student to identify and develop individual interests in these areas: focusing learning on selecting, planning, and conducting projects (individual or group), contributing to understanding and evaluating knowledge. The curriculum of this type of center would be made up of learning units consisting of guides for the study of topics or tasks. This formal curriculum would be supplemented by instructor/student generated project activities that reflect students' interests and incorporate models of inquiry presented by instructors.

SOCIAL LEARNING CENTER

The group project approach would be the predominant mode in studying interpersonal and intergroup relations, community organization and functioning, citizenship roles, the resolution of community problems, and the like. This stress on learning in groups has two justifications. One is the obvious fact that one best learns to relate to others by sharing meaningful activities with them. The other is that learning in groups is consistent with the fact that human beings live in group situations most of the time. A chief requirement for instruction in social learning centers is that many learning experiences take place in community settings where community members and agencies participate in the instructional process.

ADDITIONAL LEARNING CENTERS

Reviewing the areas of learning covered by the four types of learning centers that have been proposed, several important areas of individual development have been ignored or slighted. One area is that of the creative and performing arts: art, music, dance, drama, and creative writing. Another neglected area is career education. Yet another is athletics. Should these areas be represented by separate types of learning centers? Or should they be planned for in the educational guidance centers, with arrangements made for each student to spend part of the time in settings offering instruction in these areas? There are various learning centers available in most schools and communities where students could attend according to their special talents and interests in the creative and performing arts. Career education would be arranged for as part of the student's general program that is planned in the educational guidance center. Physical education or athletics also could be planned as part of the student's general program, using both school and community settings.

STUDENTS' WEEKLY SCHEDULES

It would be the task of the educational guidance center, in collaboration with the staffs of the several learning centers, to work out weekly schedules for students on an individual basis for both required and elective areas of study.

Time expenditures in the different centers would vary considerably from student to student, depending on both learning needs and preferences. For elementary and secondary students, the modal time assignments to the learning centers in terms of today's five-day school week might be something like the following:

	Elementary	Secondary
Educational Guidance Center and Psychological Education Center	1/2 day	1/2 day
Skill Learning Center	2 days	1 day
Academic Inquiry Center	1 day	1 1/2 days
Social Learning Center	1 day	1 1/2 days
Creative & Performing Arts	1/2 day	1/2 day

Major departures from this modal schedule would be arranged with individual students, either for short or lengthy periods. Thus a student with a strong interest in art might devote a major part of the week to this subject for a period of months and a student preoccupied with preparing for a career might spend the bulk of the school week in an occupational setting.

Initiating a 12-month school year, and providing instruction evenings and weekends would greatly extend the schedule possibilities for individual students.

Assigning a student to a learning center for a part of each week would not necessarily mean that the student would spend all or even part of that time in the physical space assigned to that center. Instead, the student might study at home or in a community setting that offers appropriate learning opportunities.

ASSESSING, RECORDING, AND CERTIFYING STUDENTS' COMPETENCIES

This design for education in the 1980's is based on the principle that what matters is what is learned, not when, where, how, or even why it is learned. This rejects present requirements that students attend school a fixed number of days per year and "pass" a given number of courses in order to obtain a diploma.

In the school system proposed, it is the responsibility of the staffs of the educational guidance center and the learning centers to assess and record each student's learning accomplishments. This assessment should apply to any learning goals of the system's program. Many times a student will learn something relevant to the school system's program outside the instructional program. The school system's staff should be prepared at any time to assess and record this accomplishment. In planning the student's program of studies, pretesting should be employed to determine whether the student has mastered the unit.

The state education department, or the public school system as its agent, should be ready at all times to certify anyone's learning attainments. This should apply to persons of any age, including adults in the community who wished to have certification of what they had learned. The concept of "equivalency" certification should be abandoned since it implies that formal schooling is how things most legitimately can be learned.

A student's learning accomplishments should be recorded in a computer data bank and the record made continuously available to the school system's staff, the student, parents, potential employers, and schools to which the student has applied. That part of the student's record concerning such matters as conduct, personality characteristics and problems, or political and religious convictions, should be kept out of the computer data bank and treated as privileged information available to the student, parents, and the school system staff.

CHAPTER VI

SCHOOL/COMMUNITY LEARNING COALITION

BY

PATRICIA A. HENNING

INTRODUCTION

The number one issue emerging from the latest series of Phi Delta Kappa biennial district conferences was: "How can the school promote both development of individual initiative and independence on one hand and social responsibility on the other?" The question is central to the future of society and the future of education. Growing numbers of people are recognizing that schools, alone, cannot adequately cope with the task. However, many educators have been instrumental in devising organizational strategies and initiating personal and institutional relationships that have shown promising results. This proposal is an attempt to demonstrate one way in which a community can develop a learning environment that promotes both individual initiative, independence, and social responsibility.

As the report of the White House Conference on Children, 1970, points out, present school practice has roots in a society in which children came to school information-poor but experientially rich. Today the situation is reversed; children now have a wealth of information but lack the skills to handle what they know. Therefore, the school must now provide the child with experiences that can develop those skills - a reversal of the traditional school role.

The following design offers a framework for thinking about new roles for schools. It is deliberately broad and flexible so that local creativity can be applied to developing systems that clearly reflect the nature of the communities in which they reside. The implementation section, does, however, contain specific suggestions on how the design might be applied to a particular kind of community. The general plan calls for heavy involvement of community organizations, local residents, business and labor, educational and cultural institutions, government agencies and public schools in an integrated learning, planning, renewal system. Its basic requirements are: identifying and cataloging all learning opportunities available in the community, mobilizing the community to create new opportunities, merging all educational resources into a coherent educational force, and organizing and guiding the learner to use these resources effectively.

While this model utilizes all available education and information resources, two institutions predominate. One is the public education system, the other is a community learning/planning coalition incorporated for the purpose of involving members of the community in community renewal, planning for the future, and life-long learning activities. A direct and productive interrelationship between the two institutions is fundamental to the design.

Although the model might be applicable to any size community, it is especially relevant to the renewal of our urban areas. Survival of cities may well depend upon grassroots efforts toward improving the quality of life and upon citizens' acceptance of responsibility for providing youth with opportunities to learn and grow as part of the community.

Harold Lasswell identified a key issue in his address to the "Alternative Futures for Education" symposium: "A major problem that faces all of us who are involved in educational activities is to work with sufficiently large coalitions, in the community, of people who will work through time with us to share articulate common community objectives and strategies." Massive grassroots efforts are needed to develop viable institutions that will respond effectively to the interrelated problems of crime - especially among youth - factionalism and inter-group conflict. Public schools are immediately effected by these problems; educational leaders would seem to have a responsibility to work toward their resolution.

We recognize the difficulty of eliciting community participation but we believe that new institutions can be invented that will facilitate participation. We also acknowledge that the personnel and institutional changes required to achieve a true learning community will evolve slowly over many years. The provisions in this model are intended to encourage and guide the early phases of the evolution.

Business, industry, professional groups, civic and cultural agencies will have to be convinced that their participation in educational programs will benefit them. There are community-based education programs that have achieved results that may influence these groups: more effective preparation of youth for employment, reduction of necessity for expenditures for security measures, reduction of replacement and insurance costs resulting from youthful vandalism, decrease in juvenile crime. This kind of information should be collected, verified and made available to interested communities as part of a technical assistance program to support local program development.

Educational designs that do not stress advances in information technology and biochemical control are often considered backward and lacking in vision. To those who hold that view, the following proposal will have little validity. This writer shares the view of visionary futurists such as Jonas Salk who see an evolving cultural transformation. While it is unlikely that any radical shift in values or the seat of power will occur during the next decade, a new society is gradually evolving.

Some of the social changes that a model such as this seeks to encourage are:

- promote participatory democracy; - The thread of "friendly fascism" is leading to efforts to find a middle ground, and recognition of a need to move away from policy formulation by legal challenge and legislative prescription and toward corporate policy-making.

- promote consumerism in education; - Presently the public gets most of its information from the mass media and politicians, both of which present a distorted picture which scares and frustrates the public. Interest in finding out how the huge national investment in education is being used will draw more people into direct participation.

- reverse the trend toward social disorganization; - Evolutionary changes in the American family have brought about a high degree of estrangement between young people and adults. There is need to promote changes in social institutions that will foster constructive development and age integration at the local level.

- enable more people to participate in educational programs, as learners and teachers; - With the increasing importance of education to personal success and societal well-being, it is imperative that ways be found to enable all citizens to engage in learning activities of their choice when the need occurs. Using neighborhood schools as learning sites for all will facilitate the trend toward life-long learning.

- reverse the trend toward large complex systems and centralize control; - There are a sufficient number of excellent educational programs in small schools - often with scanty financial support - to justify a reappraisal of the energy-consuming, impotent monsters we have created. The focal point of the system should be the student and decisions affecting his/her education should be made by those close to him/her including the student him/herself.

Many pieces of the school of the future are present in this country already. However, we are a long way from the degree of school/community cooperation envisioned in this design. If one thinks of community involvement along a continuum beginning with school personnel informing the community, then interacting with the community, then cooperating with the community, then institutionalizing school/community cooperation, and finally arriving at mutually shared responsibility for educating youth, we are now at steps one through three.

ORGANIZATIONAL ELEMENTS

Community Learning/Planning Coalition

The Community Learning/Planning Coalition represents the various interest groups within the community. It is the vehicle for mobilizing community resources in an ongoing learning/planning/renewal effort. It develops policy, designs programs and projects, and collects and disperses funds. The Coalition serves the public education system by enlisting active community participation in school programs: compiling a learning resources file, establishing training programs, incorporating youth-operated businesses, designing and acquiring funding for the creation of new learning resources, serving as collaborating teachers, sponsoring and supervising out-of-school education programs, and acting as role-models and consultants. The Coalition also enlists the support and participation of business, industry, labor and professional organizations in these activities.

The Coalition provides a new environment which integrates education, participatory planning, and community development. It has elements of home, in that people of all ages are helping and looking out for one another. It has elements of work in that it fosters cooperative productive relationships in goal-oriented tasks that require effort and discipline on the part of the participants.

Neighborhood Learning Centers

The present system of a hierarchy of comprehensive schools for different age groups is replaced by neighborhood learning centers that serve everyone in the community. Each Neighborhood Learning Center houses an early childhood learning center, individual and group counseling services, an instructional management center linked to the central community resources file, and a specialized learning laboratory.

Centers could be housed in present school buildings which have been remodeled to accommodate new functions and activities or they could occupy portions of community centers or other appropriate facilities. They are open to all residents all year round, day and evening.

Early Childhood Learning Centers serve the very young learners in the community, beginning at age four or five and continuing through age seven or eight. The actual age limits will vary from community to community; however, there is evidence of a trend toward beginning at age four and ending the primary school at age seven. In these centers the focus is on children and their needs. Materials, methods, pace, setting are selected to accommodate the individual child and enhance his/her growth. People of various ages are at hand to encourage and guide the child's learning, to share knowledge, ideas, and insights. In addition to the regular staff, there are adult volunteers and older students.

Counseling Services

Each student is a member of a counseling group composed of 8 to 10 students and an educational advisor. Ideally, this group would stay together from early years into adolescence. A close personal relationship with the counselor over a long period of time is necessary to develop understanding and trust. This system provides students with a person they can turn to for help when they encounter problems with any aspect of the program.

Students will also meet with their educational advisor on a one-to-one basis and with their counseling committee two or three times a year, or as the need arises. The committee is made up of people who interact with the youth - family, teachers, work supervisor, social worker, coach or recreation leader, etc. The composition of the committee is flexible and reflects the student's activity at any given time.

The Instructional Management Staff in each Neighborhood Center provides technical assistance: record keeping, scheduling, maintaining the resource file, evaluating resources and programs in school and in community, and coordinating outside experiences. A computer-based management system might be utilized by the staff in performing these services. A computer-managed instruction (CMI) system stores and processes information about learning resources. School and community resources are cataloged (i.e., topic, learning objectives, method, type of activity, level of difficulty, required skills time and place resource and/or instructor are available) and the information stored in the computer. Program evaluation information is collected and also put into the computer. In this way the CMI provides the information needed by students and their adult counselors to select appropriate learning experiences for attaining individual program objectives.

Specialized Learning Laboratories

Each neighborhood center also houses one of a cluster of specialized learning laboratories devoted to: Arts and Humanities, Natural/Physical Sciences, Technical, and Social/Behavioral Sciences.

The specialized learning centers house laboratories, museums, reference libraries, and instructional materials for use by the entire community. Workshops, mini-courses, lecture/discussions series are conducted evenings and weekends for the convenience of working adults. Children of all ages engage in learning activities in all of the centers. The very young children take field trips to the centers in the company of their teachers. Displays, activities, games and demonstrations are especially designed by staff and older children to appeal to the young. Older children also serve as guides and tutors.

For out-of-school adults the learning centers provide resources for up-dating and refining knowledge and skills; in depth study of public interest issues requiring technical expertise (i.e., nutrition, drugs, food additives, consumer law, etc.); and avenues for developing expressive and creative talents. Through personel contacts with outside scholars, researchers, and citizens, individuals become linked to a community of interests that greatly expands the pool of knowledge and technical skill available to them and to the children they counsel.

Community Resources

A key factor in the design is the concept that a school can greatly expand the number and variety of learning resources available to students. This can be done by systematically identifying and cataloging existing resources in the immediate neighborhood as well as those in the broader community, and by employing school/community expertise and student talent to create new resources. Both the process of creating new learning facilities and the facilities themselves become learning resources.

Staff

The staff of the learning centers should be people who have volunteered to work in this kind of setting. They should above all be people who are not antagonistic toward young people or the values and life styles of the community. In addition they should be capable of assuming non-authoritarian roles, willing to accept change, and eager to learn as well as to teach.

In addition to a building administrator, certified teachers, and technical and teaching aides usually found in schools, the community learning center would require the following kinds of staff: educational advisors, collaborating teachers, and community coordinators.

Educational advisors are trained in group and individual counseling techniques and are knowledgeable about available instructional resources and techniques for querying the resource file. They work closely with the students in their counseling groups to:

- identify long-range educational and occupational goals
- assess standing in relation to these goals
- discover the variety of courses and other learning options available through the resource file
- ensure an on-going process of evaluation and goal reformulation

Ideally, they would do this only part of the time, while also serving on the faculty of one of the learning centers.

Collaborating Teachers are paid, part time staff who teach in the community. They bring practical knowledge and experience from the real world into the learning environment. They are government employees, business people, lawyers, printers, bakers, accountants, creative artists, etc. A certain optimum ratio of collaborating teachers to regular teachers would be determined in conjunction with the full-time staff.

Community Liaison serves as a communication link between the system and uninvolved citizens. This person provides information on: 1) how to access courses (parents as students); and 2) available options for children's education. In addition he/she promotes understanding of the education program through workshops, mass media, personal contacts; elicits involvement in planning, policy-making, teaching and learning; and scouts the community for resources.

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THE INSTRUCTIONAL PROGRAM

In contrast to present practice, an educational system for the 1980's should provide an environment which fosters the attainment of the system's explicit goals. The proposed model provides a wide variety of learning environments, instructional techniques, learning materials, and interpersonal relationships that can be matched with student interests, abilities, and learning styles to enhance the achievement of desired learning objectives. Teachers and counselors are responsible for adapting the learning environment to the learner and for integrating community experiences into the learner's program.

Students are encouraged to take responsibility for defining their own learning goals. They are aided by their counselor and teachers in selecting the experiences which will best assist them in meeting their goals. There are some constraints built into the system in that a minimum level of attainment in essential skills and a basic understanding of key concepts and processes are required. The nature of these skills will be defined by the community, students and faculty through periodic needs assessments surveys.

Learning takes place inside the learning centers and laboratories, in community centers, museums, libraries, business offices and government agencies. Students work along on a one-to-one basis with adults or peers, in small group and large group settings. The amount of time an individual student spends in these diverse settings varies according to age and previous record of achievement in the setting. Courses will last only as long as necessary to meet specified learning objectives. Some will continue over long periods of time, others will be short intensive experiences.

Group and individual counseling sessions are an integral part of the instructional program. The primary purpose of the weekly meetings of the counseling groups is to help the students to know themselves - to discover their interests, assess their needs, set their own learning objectives and to evaluate their experiences in relation to those objectives. The group sessions also provide the setting for acquiring skills in social interaction, decision-making and processing and conceptualizing experiences.

Students keep personal journals as a record of their learning activities and their evaluation of the learning experiences for themselves and for others. The journal can also constitute a personal record of feelings, insights and observations that the student can refer to in the future to see how much he/she has grown. Journal-keeping can begin as early as first grade with guidance and assistance from teachers. Children can use audio cassette recorders to augment their written journals. These oral journals can be transcribed and used in reading instruction.

As students gain understanding of themselves and the opportunities open to them, they should be able to define some long-range academic, personal and social goals and to develop, with adult guidance, a plan for reaching those goals. The counselor's role in developing a student's program of studies is to provide for diagnosis of needs, sequencing of experiences, and assessment of the appropriateness of student choices. The counselor can query an extensive resources information file to determine what learning activities, in terms of learning packages, workshops, community service or work experiences are available and what kinds of skills and subskills are necessary for the student to participate successfully in the activities. The student's readiness can be determined by verifying mastery of the necessary subskills. This information may already be available in the student's record-of-achievement file, or can be acquired by testing.

Instructional Goals

The proposed design is predicated on seven general educational goals which are judged to be very fitting for the 1980's and beyond:

1. The development of human potential with emphases on self-fulfillment, respect for the dignity of human life, and the unique worth of each person.

2. The enhancement of interpersonal skills leading to satisfying relationships with others.

3. The nurture of personal values and social conscience, including the valuing of a diverse and pluralistic society (understanding and appreciating persons who belong to different social, cultural and ethnic groups) and respect for democratic political processes (responsible citizenship).

4. Development of an awareness of the problems associated with living in a world of rapid change and unforeseeable difficulties.

5. Development of a respect for the value of work, the achievement of occupational competence, as well as knowledge of vocational career opportunities.

6. Development of basic skills sufficient to assure each individual reasonable success in coping with the reading and computational demands of society.

7. Development of cognitive competencies, including skills for organizing and integrating information, and a framework for making decisions and formulating diverse values.

In line with the concept of shared responsibility for education and socialization of youth, the proposed educational system places upon the school the responsibility to:

Provide each learner an individualized program. Instruction is directed toward the learner's continuous progress in developing his/her highest human potential.

Provide settings that are consistent with and contribute to the learning objectives. These include small and large groups, and one to one relationships with adults and children of different ages.

Provide learners with a variety of flexible learning options in educational institutions and in the community.

Provide a system for identifying, organizing and accessing information on school and community resources according to topic, learning objectives, method, level of difficulty, required skills, time and place resources and/or instructor.

Provide a system for integrating formal schooling into a total educational process - a learning community - that involves everyone, everyday in learning and teaching.

Provide counseling, testing and field-based experiences to assist learners in setting their own realistic goals for education and work.

Provide a teaching and counseling staff composed of people who know and care about children and who will bear responsibility for making the educational system work for each individual child.

The community-centered aspects of the proposed educational system are meant to:

Provide for the gradual socialization of the young by means of cross-generation work groups, community role-models, participatory planning and cooperative educational and cultural activities. There are vast possibilities for expanding these provisions within the system.

Provide a learning environment which fosters respect among generations through cooperative endeavors and helping relationships.

Provide opportunities for citizen involvement (including younger citizens) in planning, research, community development, mutual learning activities.

Provide historical perspective on current problems through extensive local history studies, on the assumption that sound community planning requires understanding of the forces that shaped present conditions as well as the long-term trends that continue to influence the social and economic well-being of the community.

Provide students out-of-school learning experiences under the direction of or in partnership with, adults in the community. These include, but are not limited to, internships and other career exploration opportunities in which adult sponsors serve as role-models or skill models for the young. Special attention is given to ensuring that females and members of minority groups are linked with appropriate models in executive positions, in the professions and in scientific and technical careers.

Curriculum can be expected to change drastically as a result of student involvement in community-based educational experiences. There will be increased pressure for the school to provide more techniques for systematic observation; skills in collecting, synthesizing and organizing information; and more generalizable principles for integrating the rich and varied data gathered from community experience.

Interdisciplinary programs have been developed that focus on community improvement projects. For example, environmental improvement projects provide many opportunities to integrate classroom learning in a number of disciplines with field experience.

- Teach environmental concepts in art education. Quality of life considerations are basic to the arts and apply to environmental issues.
- Attend to the social and esthetic context of science, the application of science to leisure time activities, the use of science to solve persistent societal problems.
- Study the history of technology and its affects upon the environment.
- Examine the role of government in regulating business in the name of the common good.

These few examples illustrate that curriculum is not limited or restricted by community-based learning to local problems. Likewise contacts and experiences should not be limited geographically. Deliberate efforts should be made to establish exchange programs with nearby communities - especially those with a different socio-economic, ethnic and cultural composition. An additional safeguard against provincialism can be provided by establishing linkages with agencies throughout the world. (Figure 1). Community learning centers have linkages through residents in the community with agencies, organizations and individuals on the local, state, regional, national

COMMUNITY LEARNING SITES

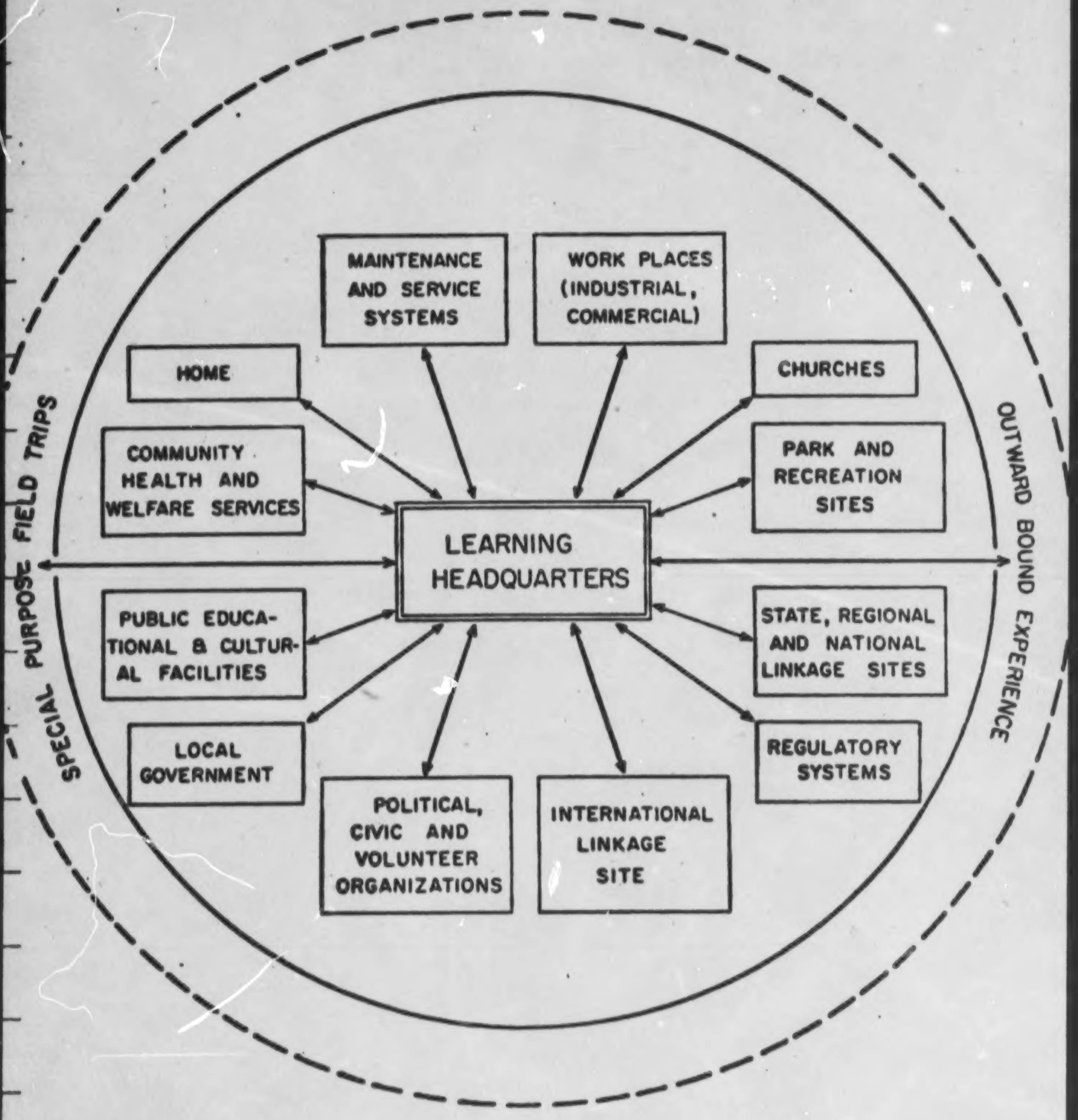
MAINTENANCE AND SERVICE SYSTEMS
WORK PLACES (INDUSTRIAL, COMMERCIAL)
HOME
CHURCHES
COMMUNITY HEALTH AND WELFARE SERVICES
PARK AND RECREATION SITES
LEARNING HEADQUARTERS
PUBLIC EDUCATIONAL & CULTURAL FACILITIES
STATE, REGIONAL AND NATIONAL LINKAGE SITES
LOCAL GOVERNMENT
REGULATORY SYSTEMS
POLITICAL, CIVIC AND VOLUNTEER ORGANIZATIONS
INTERNATIONAL LINKAGE SITE
SPECIAL PURPOSE FIELD TRIPS
OUTWARD BOUND EXPERIENCE

Figure 1.*

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*Elise Boulding, "Learning to Make New Futures," speech presented at symposium on "Anticipating Tomorrow's Schools." Philadelphia, Pa.: Research for Better Schools, Inc., 1975.

and international levels. By strengthening the links with the horizontal community - through the learning coalition - and bringing children and youth into the group, young people can be linked into an international social and information network.

LEARNING ACTIVITIES

What follows is a listing of some activities which could be undertaken during the initial stages of the programs. Some of these activities might not be appropriate for all communities but it should not be difficult to devise fitting substitutes. Furthermore, these projects should generate ideas for new projects.

Community renewal

Strengthen "sense of community" by:
  - Conducting a community survey and needs assessment
  - Compiling a directory of community resources
  - Undertaking a local history project, including oral history
  - Publishing a community newspaper
  - Producing multi-cultural events
  - Engaging in participatory planning for the future of the community
  - Developing varied recreational programs for youth

Humanize the environment
  - Restoring natural sites, streams
  - Creating nature centers
  - Restoring railroad stations, public places, bus stations, trolley stops
  - Creating or improving playground parks

Provide community-based, public service employment for youth
  - Improving the environment
  - Youth organizing their own "business" and contracting to perform needed community services

Education

The renewal and planning phases offer numerous opportunities for experiential learning for students of all ages, including college and non-school adults.

- Conducting community survey and needs assessment
- Compiling and publishing directory of community resources
- Researching and writing local history report
- Interviewing local citizens and doing research for oral history projects
- Participating in educational and cultural events
- Reporting, writing and editing for community newspaper
- Designing, publishing and distributing newspaper and other publications
- Designing and developing nature walks and educational exhibits, and planning and participating in educational programs of the nature center
- Learning about trades and crafts in conjunction with environmental improvement projects
- Researching, planning and writing "future histories" in conjunction with the planning phase of the project

Planning

- Participatory "futures" planning for the entire community includes "futures" workshops and Delphi studies
- Mapping alternative futures for the community
- Writing "future histories" (scenarios of community life related to different alternatives)
- Formulating plans for a "desirable" future
- Devising strategies for implementing plans

Community Service. The advent of urbanization has resulted in the alienation of a great many youth from adult society. Opportunities for young people to engage in useful activities, to contribute to the well-being of family and community which were available in an agrarian society are absent in today's cities. This design aims to involve all youth in meaningful community development and social service programs. Participation in the kinds of development activities described above enables children of all ages to become contributing members of the community by involving them in useful projects. For example, the development of education facilities in the community becomes a community-wide effort relying heavily upon the time and talents of school-age children who work under the guidance of adult specialists from the community. Another example, planning and building a nature center, i.e., designing and building exhibits; writing and designing and producing educational materials could provide learning experiences for a mixed-age group of children and an opportunity to work with adults to produce an important community resource.

Community Resource File. Community participation in the identification and cataloging phase of the project can be facilitated simply by utilizing a questionnaire and distributing it widely throughout the community. The more difficult and time-consuming task is following-up on this initial input and carrying through to the point of achieving community consensus. A community task force composed of adult residents, college and high school students can be created to perform this task.

Vouchers. It is becoming increasingly clear that no one institution can provide the full range of experiences, the technical expertise, and specialized knowledge that must be made available to learners. While the community learning coalition and the community resource file greatly expand the range, scope and number of sophisticated technical and intellectual resources available to learners, there still will be areas not represented. Therefore, some sort of voucher system will be employed to allow students to purchase certain specialized educational services from local colleges, technical schools, commercial or industry-sponsored education agencies.

Community involvement in educational planning. Before any action is taken to involve the community in planning for the future of the educational system, the project leaders would want to study previous experiments in this area in depth. Project Redesign in Palo Alto, California and the Skyline Wide Education Project in Dallas/Ft. Worth, Texas are two programs that should be extensively studied for information and guidance. The Project Redesign Community Planning Model could well be a useful instrument for organizing the community planning phase of this design.

Business involvement. The experience and knowledge of the Academy for Career Education could provide valuable support for the experience-based education aspects of this plan. Were a pilot project of the proposed design established in Philadelphia, the existing cooperative relationship between the Academy for Career Education and the Greater Philadelphia Chamber of Commerce would provide a strong base for dealing with the business community. The Urban Coalition of Philadelphia has also had striking success in eliciting financial support from business and industry for student-managed, student-operated electronics and machine shops in existing schools.

Although these successful examples of business and industry cooperation in education are sources of hope, it must be recognized that moral suasion - and appeals to economic self-interest will not be sufficient to garner support on the scale called for in this design. Therefore, a study should be undertaken, as part of the pilot project, to determine the feasibility of tax incentives and similar inducements. A business that allows a number of employees to devote a half day of each week to community education and development endeavors would, no doubt, expect some kind of remuneration.

The National Scene

The idea of turning the community into a classroom is not a new one. Archibald Shaw and others proposed such a system in "The Random Falls Idea" as far back as 1956. In recent years, community involvement, action learning and similar programs have become very popular with educators and students. An implementation strategy should take advantage of the current predisposition toward youth involvement as reported by the following sources.

The National Commission on Resources for Youth has gathered considerable information about successful youth participation programs that enable youth to assume new roles in the school and in the community.

The National Association of Secondary School Principals reports that "one clear trend in secondary schools during the 1970's has been the significant expansion of work experience, community service and other forms of action-learning." During the 1973-74 school year more than 2,000 school principals responded to a NASSP survey with descriptions of action-learning programs currently operating in their schools.

The 1974 NASSP Gilbert Youth Poll reported that 43 percent of high school students are involved in some form of community service. There is a need to expand the degree of youth involvement, extend the range and variety of opportunities, and coordinate in-school learning with the activities of local community organizations and civic leaders.

In every community citizens can point to numerous needs that are not being adequately met. Action, the U.S. government agency for volunteer service, estimates that with proper advance planning, a community of 100,000 persons could utilize 2,500 young people annually in part-time public service and non-profit agencies.

As U.S. Commissioner of Education Terrel H. Bell pointed out in a speech supporting community education, five recent reports on educational reform contain similar recommendations that call for a more open, flexible system of education:

1. Dejuvenilize the whole operation. Drop the 8 a.m. to 3 p.m. custodial function. We know that strictly academic subjects occupy only part of the school day. Today's students won't tolerate being trapped in meaningless activity the rest of the day.

2. Develop more work-study arrangements with local business and non-profit organizations to broaden student awareness of the adult world.

3. Develop more opportunities, plus credit toward graduation, for students to work as volunteers in hospitals, day-care centers, government agencies, and the like.

4. Offer greater flexibility in class scheduling so students can spend part of the school day in a museum, attending a concert, sketching in a park, or engaging in other intellectually stimulating activities. Not all students are mature enough to handle this freedom, but many are. Certainly we should give it to those who can and will benefit.

5. Reduce the age and cultural isolation of students by giving them opportunities to meet people of all ages and cultural backgrounds -- in school and out. Bring in artists, artisans, business and professional people to work with students. Allow students to visit these people in their own work environments.

6. Open schools to researchers seeking answers to basic questions -- how students learn, what makes teachers effective, which instructional approaches work best with disadvantaged students, handicapped students, and so on. And put the research results to work. Research is only as good as its user.

CHAPTER VII

COMPREHENSIVE ADAPTIVE RESPONSIVE EDUCATIONAL SYSTEM

BY

DAVID C. HELMS

INTRODUCTION

Historically, an affluent American society has been generous and patient with educators striving to find solutions to problems that have prevented many learners from achieving all that they need and are capable of, and all that we hope for them. Given that the future is likely to see declining resources for social endeavors, it is reasonable to expect that society will be less generous and less patient with educators who continue to struggle with the same problems with little evidence of progress. This gloomy prognosis promises to become reality unless we begin to produce evidence that we are thinking and acting in ways that will contribute to improving the quality of education for everyone. Moreover, we must show that we are doing so with an increasingly economic use of resources.

This is not to say that we have completely failed in the attainment of our educational goals or that we always act irrationally with respect to those goals. Nor does it suggest that we ought not to strive to attain goals for which there are no presently validated means for their achievement. However, it does imply that, as a profession, education has not established adequate knowledge of educational ends - means relationships. It implies that we have not developed sufficient commitment and skill to consistently apply what we do know. And mostly, it implies that we have not learned well to learn from our experience and to build on that basis.

The conviction that underlies the proposition of this paper is that our educational endeavors for the future can achieve our educational goals. But for this to happen will require that we cooperatively plan our activities on the basis of knowledge and logic; it will require that we discipline ourselves to act in accordance with our plans, and most important, it will require that we learn to systematically modify our plans and practices on the basis of empirical evidence from our experiences.

Thus, it is proposed here that we now make a full commitment to the cooperative development of a Comprehensive, Adaptive and Responsive Educational System (CARES) that educators and learners can use, together, to plan and implement instructional experiences that will reliably lead each learner to the achievement of intended outcomes. To assure that the instruction will be comprehensive, and adaptive and responsive to individual learner needs and interests, instructional decisions will be based upon data about what is to be learned, data about the learner, and data about instructional effects. Such a system will also assure that the instructional options it provides will be comprehensive, adaptive and responsive with respect to the intentions of the constituencies it serves, (e. g., the local education authority, parents, the various communities of interest, and knowledge producers). Thus, the system will not be tied to time-bound notions of curriculum and community expectations.

It is further proposed that CARES be systematically developed with the cooperative aid of its constituencies; and, in lieu of reliable alternatives, that the mode of its development be empirical. That is, a Design, Implementation, Monitoring and Evaluation System (DIMES) be developed and employed to produce by cumulative testing and revision successive approximations of CARES that are increasingly effective in facilitating learner achievement of intended outcomes.

It should be emphasized that this is a proposal for the development of CARES as contrasted with proposals for the implementation of fully prescribed educational designs. Hence, the details of CARES will only become clear over time, and, even then, will be subject to change on the basis of new knowledge gained from successive experiences. In short, a detailed description of CARES must, necessarily, be emergent. The same is largely true for DIMES.

However, initial approximations of these systems will not be emerging from a vacuum. There is a long history of attempts to adapt instruction to individual pupil differences, and much that has been learned from these attempts can be used in conceptualizing a first approximation of CARES. Similarly, there is a history of empirical development of educational products and processes to draw upon in planning a system (DIMES) for the development of CARES. The remainder of this paper is devoted to discussion of CARES and DIMES, namely: (1) the problems they address, (2) systems rationale, and (3) some notions about first approximations of the systems.

Before proceeding, however, it is appropriate to spell out some general assumptions and limitations of this proposal.

1. While the future is unknowledgeable to us, it will be largely what we make it. Implications of what it might be can be gleaned from present directions.

2. The time reference for the realization of the proposed systems is the decade of the eighties.

3. It is assumed that control of educational policy and practice will continue to reside in state authority and local communities.

4. It is assumed that the institution of the school will continue to be responsible for the formal education of the young.

5. While most schools will vary in a number of features, most schools and communities will subscribe to the achievement of their own intentions, and, particularly, greater learner achievement.

6. Resources for education will become increasingly difficult to raise, and communities will expect more for the same or, the same for less.

7. Technological resources will be mostly what can be projected from research efforts going on today.

Comprehensive, Adaptive and Responsive Education System (CARES)

Problem

It is assumed that all communities and schools are committed to having all learners achieve the intended outcomes of the education provided them. However, the fact is, all learners do not achieve the intended outcomes, and many do not achieve them sufficiently to function adequately in the economic world or to carry on literate participation in the democratic processes. For example, the National Assessment of Educational Progress revealed that 36 percent of 18 year olds tested were unable to compute the distance traveled by an auto when given the average speed and number of hours involved (1). Nearly 60 percent were unable to accurately read all parts of a ballot (2).

There is a substantial body of opinion that holds the educational system free of responsibility for this state of affairs on the basis that variations in socio-economic conditions correlate much more closely with pupil achievement than do variations in the conditions of education (3). Many have had difficulty in accepting this line of thought and, more recently, evidence has begun to accumulate in support of the traditional belief that the quality of educational input has a profound affect upon educational outcomes (4).

Given that the quality of education is critical to educational achievement and that many pupils do not seem to be benefitting, even minimally, from their educational experience; what can be done in the future to increase the probability that all pupils will have an equal opportunity to achieve intended outcomes? If one accords any credence to the socio-economic effects argument (and most do), certainly, social and economic improvement programs are called for. But, these are not the exclusive responsibilities of the schools. The specific concern of this proposal is the creation of a school that will offer to each pupil an equal in-school opportunity to achieve formal learning commensurate with rational expectations of the school's constituencies.

The problem, then, seems to be to provide a system of education that is at once comprehensive, adaptive and responsive for the diverse constituencies of the school and for the instructional needs of individual pupils who attend the school.

Rationale

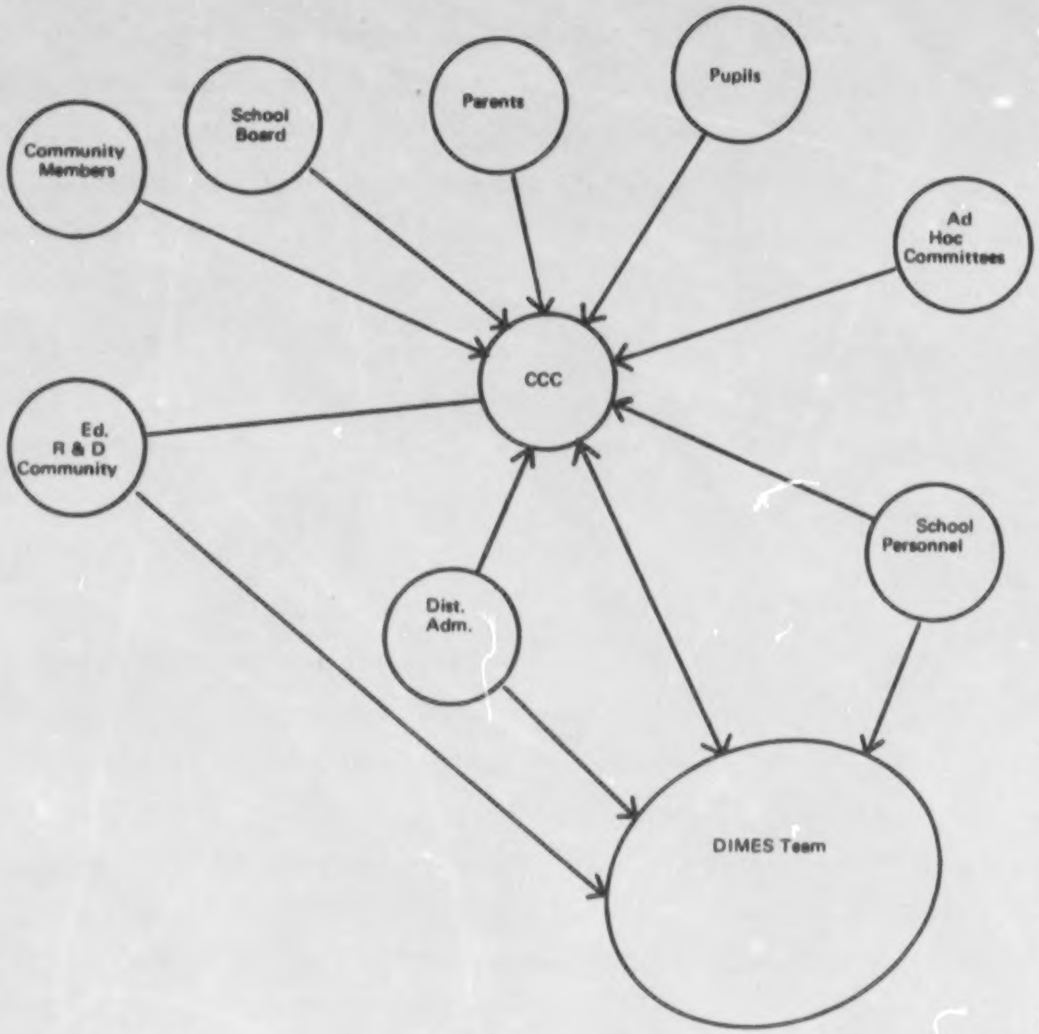
Central to the rationale of CARES is the fact that individuals differ along every dimension that might be used to describe them. Yet, individuals will join and support group efforts in the interest of strengthening their individual voices and actions so long as they are able to subscribe to the aspirations and actions of the group.

Also, central to the rationale is the proposition that education in this country has become increasingly difficult to govern as the result of growing tensions among increasingly diverse groups. Moreover, the propensity of our society to struggle to a majority decision which then becomes the rule for all seems to have lost considerable support among many activist minority groups.

Too often, "political" decisions are made without benefit of technical knowledge and logic. Consequently, they fail to accomplish intended outcomes and frustrate conciliators and dissidents alike. Even in those cases when research-based innovations are adopted, they are too frequently compromised by circumstances of local implementation that they were never designed to accommodate.

In view of the above, a Comprehensive, Adaptive and Responsive Educational System that provides instruction that reliably leads to greater achievement for all pupils can only be developed if that system is also *comprehensive* with respect to the constituencies it serves, *adaptive* with respect to the diversity of their interests, and *responsive* in terms of the actions and feedback it renders them.

This observation implies the need for organizing constituencies and establishing an operating group responsible for advising the constituencies and carrying out the agreed upon school innovations. The first might be called the Council of CARES Constituencies (CCC), the second the Design, Implementation, Monitoring and Evaluation System (DIMES) Team. The composition of these organizations and their relationships to each other and to traditional education interest groups are themselves subject to determination by the parties involved. However, the following diagram suggests one possibility.


Community Members
School Board
Parents
Pupils
Ad Hoc Committees
CCC
Ed. R & D Community
School Personnel
Dist. Adm.
DIMES Team

Just as CARES will only be effective if it serves the diversity of its constituencies, so instruction provided by CARES will only realize the intended outcomes of instruction if it is comprehensive, adaptive and responsive for the pupils, individually. It is intended that CARES instruction will be comprehensive in the sense that "what" can be taught need only be limited by the specifications of the governing agencies, the aspirations of the CCC, and the limitations imposed by available knowledge of "how" instruction can be made effective.

It is also intended that CARES will provide for adapting procedures and dimensions of the school environment, as necessary, to increase the effectiveness of instruction, or to enhance the experience of pupils in ways intended by the CCC, or to economize the use of resources. Of course, it will be necessary to guard against implementation of practices that obviate other practices. Particular attention will need to be given to the preservation of the integrity of the instructional process. When conflicts rise, consequences and choices will need to be specified for consideration by the CCC.

Feedback to pupils, individually, indicating their achievement and/or difficulties will be a response feature of CARES. Other response features include provision of new learning options as individual pupils proceed along their individual learning paths and alternative experiences when instruction has not been successful. Finally, reinforcement of pupil development and achievement is intended to be a significant form of the responsiveness of CARES.

Some Notions about a First Approximation of CARES

Since CARES will not be emerging from a vacuum, as has been noted, some notions of a first approximation of the system may be discussed in terms of parameters common to all schools.

Instruction: The notion of instruction is, perhaps, the most projectable of CARES' features. It projects into the future a conviction stated by Washburne in 1925 and again by Glaser, in much elaborated form, forty-five years later.

> It has become palpably absurd to expect to achieve uniform results from uniform assignments, made to a class of widely differing individuals. Throughout the educational world there has, therefore, awakened a desire to find some way of adapting schools to the differing individuals who attend them. This desire has resulted in a variety of experiments (5).

> Individual differences are a basic element in any theory of instruction that underlies educational practice. Deep understanding is required of the manner in which the existing performance capabilities of our students, whatever the origin of these capabilities, interact with the conditions provided for learning. It is a fundamental tenet of teaching that instruction should proceed from "where the student is." However, carrying this out in practice is not an easy task. School organizations generally are not flexible enough to adapt, as we would like, to individual differences. Furthemore, we are not always sure what individual differences to observe that are useful for deciding upon different techniques of instruction, if we could provide them. Nevertheless, scientific evidence has firmly established facts of human variability and individuality, in the face of which, the uniformity of our educational system is seriously out of joint (6).

The notion of individualization of instruction proposed for CARES traces from the work of Burk at San Francisco State Teachers College beginning in 1912-13, through Washburne's experiment at Winnetka in the twenties, to the work of the Learning Research and Development Center (LRDC) at the University of Pittsburgh (7), and Research for Better Schools, Inc. (RBS) in Philadelphia, 1966 to the present (8).

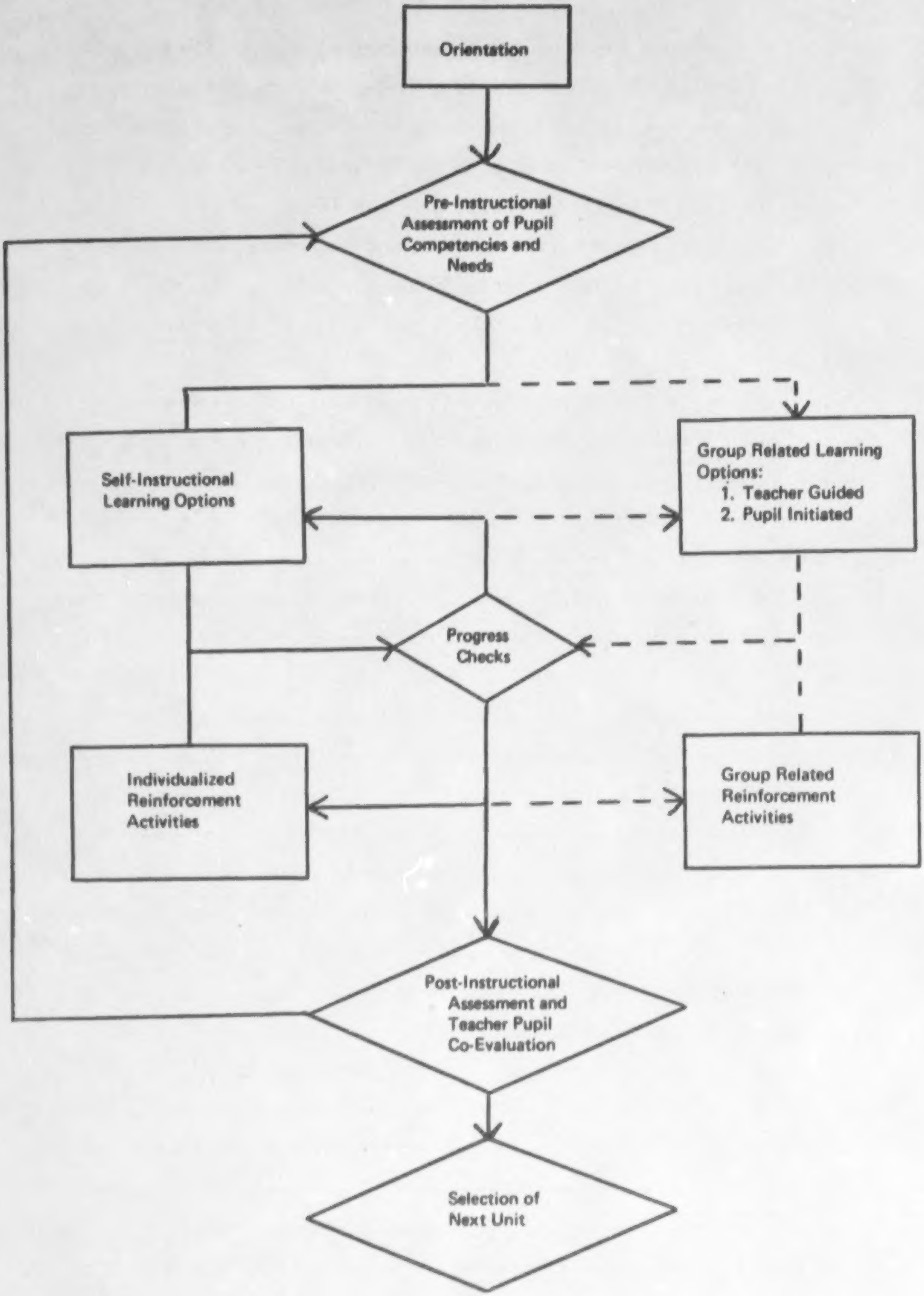
Burke and Washburne's intent was to differentiate instruction according to the diversity of learning rates among pupils. Glaser and associates at the LRDC, in addition to utilizing modern technologies of behavior specification, instructional programming and criterion-referenced testing in their development of individualized instruction, expanded their notion of individualization to include the matching of instruction to pupils on the basis of tested competencies and diagnosed needs. Investigation of potential aptitude-treatment-interactions is now being carried on by a number of researchers and will likely be available for subsequent versions of CARES.

The work of the LRDC and RBS with "Individually Prescribed Instruction" (IPI) also yielded much feedback indicating the need to provide: opportunities for pupils to make learning choices; varied group settings; enactive, iconic and symbolic instruction; opportunities for exploration, inquiry, and generative learning; and so on. Particularly important, however, was recognition of the complexity of the burden upon teachers attempting to manage a number of different individualized curricula, each distinguished in its management system by a number of idiosyncracies. Moreover, with the advent of open-education, the developers were additionally impressed with the compounding of difficulties teachers would encounter if they were to manage several individualized instructional programs during the same time-frame. The need for a management system common to the several curricular areas is obvious and underway; it should be brought to completion within the CARES school.

An initial version of a superordinate system for the management of all instructional units across all curricular programs is diagrammed below.

The dotted lines to the right indicate group activities may occur at various points in instructional time. While one or more Teacher Guided Group experiences may be required, teachers may include additional group experiences if there is a need. Of course, Pupil Initiated Group Activities are just that, pupil initiated, hence they are indeterminate with respect to number and points of occurrence.

Reinforcement activities will be particularly helpful when practice or instructional alternatives are indicated by the Progress Checks or Post-


Orientation
Pre-Instructional Assessment of Pupil Competencies and Needs
Self-Instructional Learning Options
Group Related Learning Options:
1. Teacher Guided
2. Pupil Initiated
Progress Checks
Individualized Reinforcement Activities
Group Related Reinforcement Activities
Post-Instructional Assessment and Teacher Pupil Co-Evaluation
Selection of Next Unit

Instructional Assessment, but, like the Pupil Initiated Group Activities, they will also be options for learners, hence indeterminate in number.

In addition to studying those curricular units which are specifically designed for affective learning, the learner also observes and relates to the teacher who is responsible for modeling appropriate affective behavior. The learners will acquire self-management skills mainly through the management of their own learning. The teacher, in addition to modeling, will also function as guide, resource person, tutor, and coevaluator.

Instructional Personnel

Experience has already shown that individualization requiring unique materials, and many of them, may be more expensive than traditional group instruction that emphasizes textbooks and demonstration materials. It is intended that the CARES school shall serve as a laboratory to research the ways and means of reducing the cost term in the effects-to-cost ratio just as it is intended that research shall be used to determine ways of increasing the effects term of the ratio. Two avenues of investigation appear promising, differentiated staffing and utilization of hardware technologies.

Recognizing that research, development, implementation, monitoring, evaluation and program revision are major concerns in the CARES school and that learners are encouraged to carry on many of the instructional tasks themselves, it is reasonable to project new kinds of administrative and staff needs and a diminished need for the traditional functions. This also suggests potential cost savings.

Certainly, there will continue to be the need for teachers, but, more likely, the need will be for fewer teachers as we presently know them and for greater need of a few teachers extremely knowledgeable of the CARES concept and operation. Such teachers, doubtless will require much more sophisticated preparation in child growth and development, curriculum, instruction technology and techniques of training and management. In short, they will be master teachers, and while they may be fewer, they will certainly require greater remuneration, individually. Still, a substantial opportunity for overall cost savings will exist as a consequence of there being fewer of them.

Nor does this necessarily mean the pupils-to-adult ratio will increase, although some increase will be possible (i.e., by virtue of a more engaging environment that will reduce boredom and the incidence of anti-social behavior). Given that instruction is largely learner-managed and, to some extent, supported and sustained by attending hardware, learners will have less need for traditional teachers. They will have the same need, as today, for warm and understanding adult guidance and associations. If we conceive such adults to be recent college graduates, intensively trained in child growth and development, serving as interns with moderate initial pay, the prospect of a net overall saving of professional costs continues to be a viable possibility.

Administrative Support

It is difficult to project even a notion of a first approximation of CARES that will not require instructional leadership of the highest order. Individualization that breaks down grade barriers and jurisdictional divisions of curriculum requires knowledgeable and diplomatic instructional leadership today. Projecting a need for greater sophistication in operationalizing CARES combined with the DIMES functions, it seems clear that instructional leadership will need to be outstanding and virtually full time.

Indeed, it is reasonable to suppose that the leader will have the support of master teachers, at least, who, individually have specializations in curriculum or instructional technology or child growth and development or evaluation or electronic aids to instruction. One might hope that the custodial and business concerns of the school might be invested in a building manager.

Hardware Technology

Studies also need to be conducted to determine the appropriate inclusion into the instruction processes of appropriate hardware technology. It is unreal to assume that hardware would, or should, carry the entire burden of instruction, but studies might reveal that interactive television, for instance could be more effective and more economical than teachers for basic skills instruction or learner practice sessions.

Education has been, perhaps, the most labor intensive of all enterprises. There is reason to believe that feasibility studies of computer utilization have not allowed sufficiently for capital displacement of expensive professional services and that this accounts for "too expensive" conclusions. With the reality, today, of free-standing inexpensive computers, the opportunity for freeing teachers from routine management and feedback tasks (among many others) suggests the potential for greater efficiency and less cost in the future. It should be noted, however, that the notion of CARES, at the focal point of the R&D effort, implies the assimilation of appropriate hardware into the system. Distortion of CARES in order to exploit capabilities of hardware will be a jeopardy to guard against.

Curriculum

It is difficult to believe, at this time, that the CCC in the eighties will not require the standard school offerings of this day (e.g., language arts, mathematics, science, social studies). However, it is equally difficult with only casual notice of the concerns in today's media, to visualize future curriculum offerings that do not attend to humanization needs, environmental protection, career planning, and so on.

Surely, these offerings will be constructed with due deference to what we have learned about the messages of Bruner, Piaget and others. Already, some products of some developers are testifying to the impact of these men whose names so dominated the educational literature of the sixties and early seventies. The second generation of products from the Learning Research and Development Center and Research for Better Schools must be counted among the new product witnesses.

Of course, such a rich array of course offerings vis-a-vis a relatively fixed amount of time for instruction raises questions of allocation and priorities. Will the CCC mandate that a minimum number of basic skills be mastered by every pupil? Will there also be new offerings that will be required for everyone? How will time be allocated between required courses and optional courses? Will it be necessary that pupils demonstrate required masteries within specified calendar limits? Likely, these will be pressing questions for schools and communities as we move into the eighties.

Even a first approximation of CARES can offer solutions to several of these questions in terms of individualizing curriculum expectations as well as instructional options. Given that pupils bring different aptitudes and competencies to the task of learning, it will make sense to determine the curriculum for each pupil, individually. Through pupil, parent and teacher planning, CARES will provide for a variety of answers to the what, when, and for how long questions. It should be noted, however, that the notion of individualized planning of curriculum is contingent upon the notion of individualized instruction discussed above.

Beyond course offerings, a first approximation can also provide choices to pupils in terms of when during the year and the day individual pupils will undertake the study of any given curriculum and any of several units within each curriculum -- and how often and how long. To a considerable degree, the choices will be the dividends derived from an open-hierarchy of units concept of curriculum organization.

DESIGN, IMPLEMENTATION, MONITORING AND EVALUATION SYSTEM (DIMES)

Problem

Because the conditions upon which research-based instructional programs were predicated were usually at odds with the realities of given school situations, developers of the sixties frequently claimed that evaluators produced non-significant studies of program effects rather than "no significant difference" evaluations. Even when necessary conditions might have been feasibly achieved, frequently they were not due to the failure of developers to look upon school personnel as co-developers and to include them in planning and strategy sessions. In many cases, when necessary conditions were initially established they proved to be fugitive over short periods of time because of insufficient attention by developers to implementation, monitoring, and formative evaluation strategies.

Rationale

This state of affairs should not surprise us since, at the time, the prevailing conception of the logistics of research and development called for a linear model, i.e., research to development to implementation to evaluate to dissemination. Thinking among developers is changing and is likely to change more in the future. It is increasingly recognized that implementation contexts and school personnel should stimulate new directions for research and development rather than simply acting as recipients of R&D. In any event, the concerns and realities of human arrangements tend to justify and support the contention of local education personnel that developmental programs must accommodate to local conditions.

With this realization has come a new perception of research, development, implementation and evaluation as a circular flow of data and activity that properly occurs in the school context. This is the perception that has shaped DIMES.

Some Notions About a First Approximation of DIMES

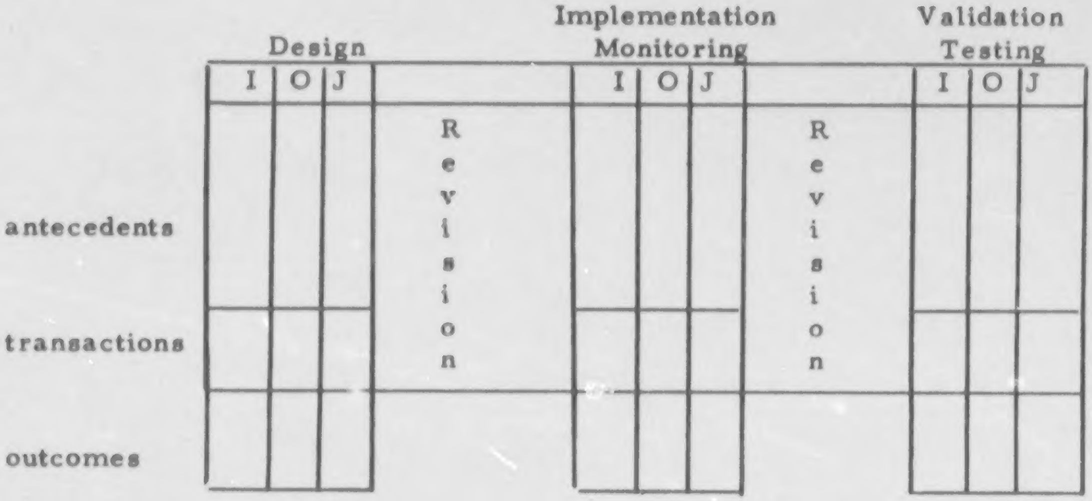
The essential components of the development system are the CARES Constituency Council, the Design, Implementation, Monitoring and Evaluation Team and the planning model.

The CARES Constituency Council consists of representatives of groups from all those interests concerned with CARES (e.g., school board, parents, district office, colleges of education, research and development community, school building personnel and others) who meet with the development group to provide input to plans and receive feedback on operations and outcomes.

The members of the DIMES team are also selected from the constituencies of CARES. The function of the team is to facilitate and coordinate plans and operations for designing, implementing, monitoring and evaluating CARES.

Just as the details of CARES and DIMES will emerge from the cumulative testing and revision which is the nature of the empirical mode of development, so will the detailed plans for implementation and evaluation.

The comprehensive, adaptive and responsive features of the system are invested in the cooperative planning and operations functions and the planning model. The model is a synthesis of "Stake's Countenance of Evaluation Model" (9), and the stages of development notions advanced by Markle (10) and Baker (11).



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CHAPTER VIII

SELECTING AND IMPLEMENTING ALTERNATIVE DESIGNS

An educational system adopting any of the four designs or their individual components will, out of necessity, proceed through a careful process of planning and implementing the innovations it chooses to introduce. This process will now be examined for each of the four designs. Also, the training needs of school personnel will be reviewed. The purpose of this chapter is to offer educational systems general guidelines helpful in responding to the designs according to their own local needs.

A GENERAL MODEL FOR THE EDUCATIONAL CHANGE PROCESS

Accomplishing planned change in schools is a systematic problem-solving process that proceeds through a series of interrelated stages. Numerous models for this change process have been devised. While these models differ considerably in the steps they include, they generally agree on the major tasks involved. The following model breaks the change process into eight phases that normally would occur in the approximate order of their listing. There may be times, however, when two or more of the phases would be carried out concurrently. This model has been presented in a training unit, Task Flow for Designing and Conducting Local Educational Improvement Programs, developed at Research for Better Schools.

1. Conducting a Goals and Needs Analysis

Logically, any change process in an educational system should begin with an analysis of needs. This task breaks down into two parts: specifying the system's goals in the area(s) of concern, and assessing deficiencies in accomplishing those goals. The area of concern might be the total instructional program, or one segment of it. It might be school-community relations, it might be the cost-effectiveness of instruction. Whatever the area, the function of a needs analysis is to ascertain deficiencies in accomplishing that area's goals.

A valuable third task in needs analysis is determining, insofar as possible, the factors causing deficiencies. To what errors of omission or comission can the deficiencies be attributed? Once such a causal analysis has been conducted, the educational system has a beginning toward determining what changes will be required for system improvement.

The Heathers model, for example, calls upon participants in the educational system--school administrators, teachers, students, parents, and community representatives--to examine the requirements for effectiveness in life roles and then to set up a priority listing of learning goals for each role.

A needs analysis requires assessing the extent to which each of the goals was achieved by students in a current program and diagnosing the areas in the curriculum or in instruction that could account for deficiencies in their achievement.

2. Searching for Resources that Could Remedy Deficiencies

There is an array of resources that could meet an educational system's needs for improvement. For instance, a variety of curriculum materials, instructional methods, equipment, and organizational arrangements are available to improve the local reading program. A national search would identify those resources that are best suited to the local needs.

The four alternative designs presented in this volume are intended as guidelines for identifying and organizing resources that are appropriate for meeting general needs of an educational system. For example, Connolly's design classifies basic life skills and suggests ways of setting about to improve instruction in these areas by employing educational technologies to enhance individualized instruction.

Henning's model, with its emphasis on community involvement and a full partnership between a coalition of community groups and the local system, requires a survey of the various ways in which school and community should be brought into close cooperation.

Recent designs for career education offer one type of resource for consideration. Alternative schools offer another. Decentralization and community involvement in school decision-making should be examined also. Various patterns for community involvement in educational planning, such as Project Redesign in Palo Alto, California and the Skyline Wide Education Project in Dallas/Fort Worth, Texas offer valuable approaches. Also, ways of involving community members of all ages as students and as instructors in the educational system should be important resources for consideration.

3. Conducting a Local Feasibility Analysis on Introducing Change

A critical requirement in introducing change is determining the capabilities and readiness for change in the educational system. Some changes that initially sound promising may have to be rejected because they are too costly, they would be excessively difficult to implement with available staff competencies, or because key decision-makers do not favor them. The function of a feasibility analysis is to identify those changes that promise to meet needs for improvement and are within the resources of the educational system.

In the Helms model for example, the task is to assess local resources and liabilities and to determine their impact on successful implementation. The critical question is whether the school system, parents, and community constituencies are in agreement about embarking on a systematic process of analyzing local needs, planning improvements, implementing them, and finally evaluating them.

4. Selecting the Changes to be Introduced

The three planning phases above provide the essential bases for selecting a change program. The local decision makers, perhaps assisted by outside consultants, should now choose the best program according to the data on needs, resources, and local capabilities or preferences. For example, assume that three areas of need have been identified and that promising resources for meeting only two of them have been located. Assume further that local resources are sufficient to adopt the preferable resource for only one of these two areas. In this case, the change selected for initial adoption should apply to only one of three need areas.

It should be kept in mind that the school improvement process need not be all-or-none but can be undertaken a step at a time. In the beginning, only selected parts of a total improvement program might be introduced. In other cases, a change program could be introduced on a pilot basis in some parts of the educational system but not others.

Henning proposes a number of activities for the initial stages of the coalition's program. These include strengthening a "sense of community", engaging in community improvement projects, and providing community-based public service employment for youth. Educational activities would include conducting community surveys, compiling a directory of community resources, and studying trades and crafts in conjunction with environmental improvement projects. Planning activities would include mapping alternative futures for the community, formulating plans for a "desirable" future, and devising strategies for implementing the plans.

Whatever features were chosen for the initial program efforts, coalition members should be involved in developing specific implementation designs. Additional features of the educational program would later be added according to an evolving process of self-renewal that engages the entire community.

5. Preparing to Implement the Local Change Program

Success in implementing any change program depends greatly on the preparations made for placing it in operation. The choice of a general implementation strategy is critical. Should the program be introduced on a system-wide basis initially, or on a pilot basis? Should participation of staff be required or voluntary?

Preparing to introduce changes normally requires developing detailed procedures for staff members to follow, preparing record or report forms, procuring necessary materials and equipment, and obtaining the required financial basis for the program. In addition, the preparatory phase should include familiarizing all participants in the program--staff, community members, parents, and students--with the program and with the roles they will play in it. In-service training for staff members and others who will conduct the program also should be a part of this preparatory phase.

Introducing an improvement program such as Connolly's design would require many steps. Obtaining materials and other resources is relatively easy, if, of course, the funds are available. Adapting resources to local requirements is a more demanding task, particularly since Connolly calls for the demanding and costly process of converting materials to computer-aided and computer-managed instruction. This process of adapting resources requires a considerable period of time as well as the services of experts from outside the system.

Training participants in a new program is essential. Five different groups are represented in various aspects of the design: coordinators and administrators; instructional managers and teachers; career directors and counselors; community agency and employer staff; and instructional and clerical aides. Training for each group could consist of pre-service pre-program, in-service, or some combination of these.

Pre-service training at teachers colleges would be primarily directed at administrators, teachers, and counselors. The instructional content should center around topics such as individualization, mastery learning, individual differences, technology, learning goals and standards, and curriculum theory. Pre-program training would be given all staff members. The training program could best be conducted in a demonstration school set up for this purpose. A continuing program of in-service training for all staff would be vital, at least for the first year of the project. The developers of the design along with the staff from the demonstration site would conduct this training.

6. Implementing the Change Program

Implementing the change program involves carrying out the process specified in the program blueprint. A key task throughout the implementation is conducting a continuing assessment of progress and correcting deficiencies if they occur. Quite obviously, the evaluation of program outcomes cannot be conducted meaningfully until effective implementation of the program has been achieved.

The critical importance of the implementation process is highlighted in a recent report from the Rand Corporation. The report, Federal Programs Supporting Educational Change, Vol IV: The Findings in Review, by P. Berman and M. W. McLaughlin, is based on a survey of innovative programs funded by the U. S. Office of Education. The chief finding was that many local programs were never effectively implemented. In examining bases for achieving full implementation of a program, the survey team found local commitment to the program a crucial factor. Also important was the degree to which the innovative program was matched to local needs and conditions.

In the Helms model, for example, once the Constituency Council and the Design, Implementation, Monitoring and Evaluation System team has been set up according to the local design, the implementation process would consist of performing the various functions in the task flow for designing and conducting change programs. These would include examining trends into the future, determining critical learning goals, deciding on curriculum requirements, instructional procedures, and organization for instruction, community involvement in the instructional program, governance of the educational system, finances, etc. An additional function of the Council and the DIMES team would be continuing assessment of how well the mechanisms were being implemented as well as how the teams themselves could be improved.

7. Evaluating Program Outcomes

The pay-off in any change program is the extent to which it achieves its intended outcomes. In educational systems, student learning outcomes are central. Depending on the goals of the program, these learning outcomes may be in basic skills, problem-solving competencies, personal or social development, attitudes toward school, or motivation toward further learning. Other types of outcomes apt to be important in appraising the program are changes made in school/community relationships of various sorts, community attitudes toward the educational system, attitudes of the system's staff toward the program, and evidence on the program's cost-effectiveness with regard to realizing its goals. Evaluation, often technical, may require the assistance of experts from outside the educational system to plan, conduct and report the findings.

When the process of planning, conducting, and evaluating a change program has reached full cycle, the educational system should then determine its next course of action. Should the program be continued without substantial change, modified to remove limitations, or abandoned? If the program was introduced on a pilot basis, should it be extended into other parts of the educational system? If the program involved only certain elements of the educational system, should it be broadened to include other elements?

Often, this stock-taking and decision phase results in a re-commitment to the never-ending process of improving the educational system and emerges in a new cycle of change.

For Heathers model, evaluation of outcomes would center on student's learning. The model's emphasis on goals for life roles calls for directing the evaluation of outcomes toward the specific goals that represent each life role. Attitudes of the system's staff, parents, students, and community representatives would be another important evaluation criteria. Also, cost factors should be assessed since these may influence the desirability of continuing or extending the program.

In the Connolly design, the evaluation task would focus primarily on student achievement in the three major goal areas (basic cognitive skills, life skills, and career skills). A second focus would be on staff, student, and community attitudes toward the change.

Cost-effectiveness is a particular focus for evaluation in the Connolly model. In the future, both parents and educators are likely to become more concerned with issues such as "Can the model under consideration yield greater achievement gains per dollar expended than alternative approaches?" Testing the model clearly calls for its comparison with other approaches. Ultimately, the decision an educational system will have to make is whether the gains are worth the costs.

The decision to continue or abandon the model will inevitably depend on the various constituencies involved in the decision-making process. Staff members, parents, and community groups could be expected to differ in their criteria for judging the success and desirability of the model. Parents can be expected to value certain learning outcomes more highly than educators. Taxpayers may differ with educators over allowable costs. Such differences make it especially important that all parties to the change program engage in a continuing dialogue about the goals of education, the means to attain them, and the outcomes of instruction.

LEADERSHIP FOR PLANNING AND CONDUCTING LOCAL CHANGE PROGRAMS

In any local educational change program, leadership can come from a number of sources--school administrators or supervisors, teachers, school board members, parents, or community groups. Students, also, can be represented in leadership roles. Also, leadership can come from outside the educational system or its community--from the state education department, university faculties, regional educational laboratories, or private educational consulting firms.

The most widely held principle of leadership for change in educational systems is that the various constituencies involved in the changes be represented in the selection, planning and implementation of those changes. This has been called participatory leadership. The participatory approach used within a school system normally includes administrators, supervisors, teachers, and parents in the decision process. Certainly by the secondary level of schooling, students also should have a voice in decision-making. When the changes call for community involvement, representatives of community agencies or groups should be included in the policy task force.

External leadership is almost always valuable in selecting, planning, conducting, and evaluating educational change programs. One form of such leadership is external funding of the change program, as is the case with federally-funded programs such as Title I or Title III of the Elementary and Secondary Education Act; or programs funded by private foundations representing both the funding agency and the educational system. Another form of external leadership is a product implementation support by program developers. This includes providing information about the product, helping decide whether it should be adopted, and assisting in actual implementation. Finally, an educational system may employ the services of consultants from state education departments, universities, educational laboratories, or private consulting firms to assist in such functions as needs analysis, resources search, staff training, program implementation, and evaluation of outcomes.

Educational systems that consider adopting any of the four designs for schools of the future presented in this volume can be expected to rely chiefly on leadership from within in examining the designs and in making plans for changes they elect to introduce.

It is highly likely that an educational system would not seek to implement all the features of a model at the same time, and it is also likely that implementation would begin with a pilot program to allow a concentration of resources, a working out of faults in the change program design or its implementation, and an evaluation of the program's success to determine whether to extend it into other aspects of the instructional program or into other parts of the educational system.

> "In the ever-renewing society what matures
> is a system or framework within which
> continuous innovation, renewal and rebirth
> can occur."
>
> John W. Gardner

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